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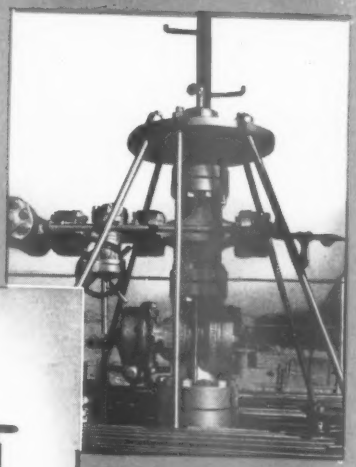

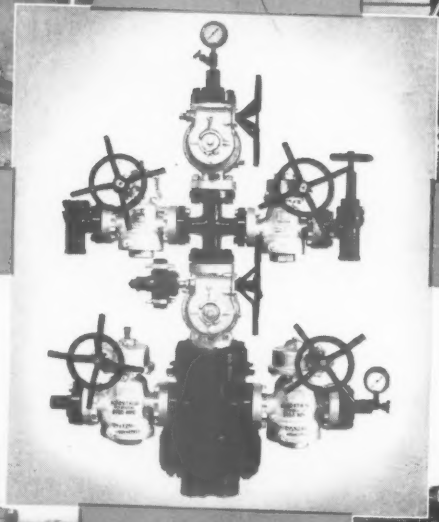

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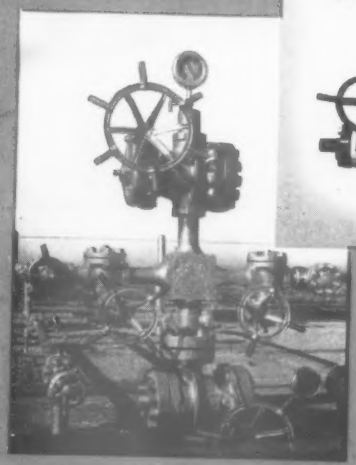

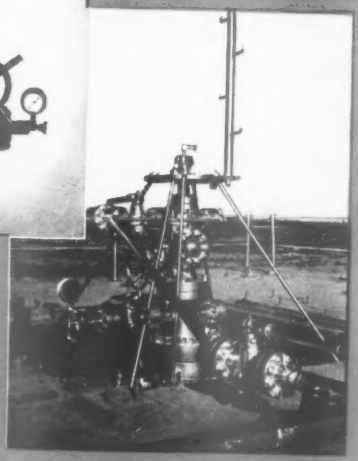

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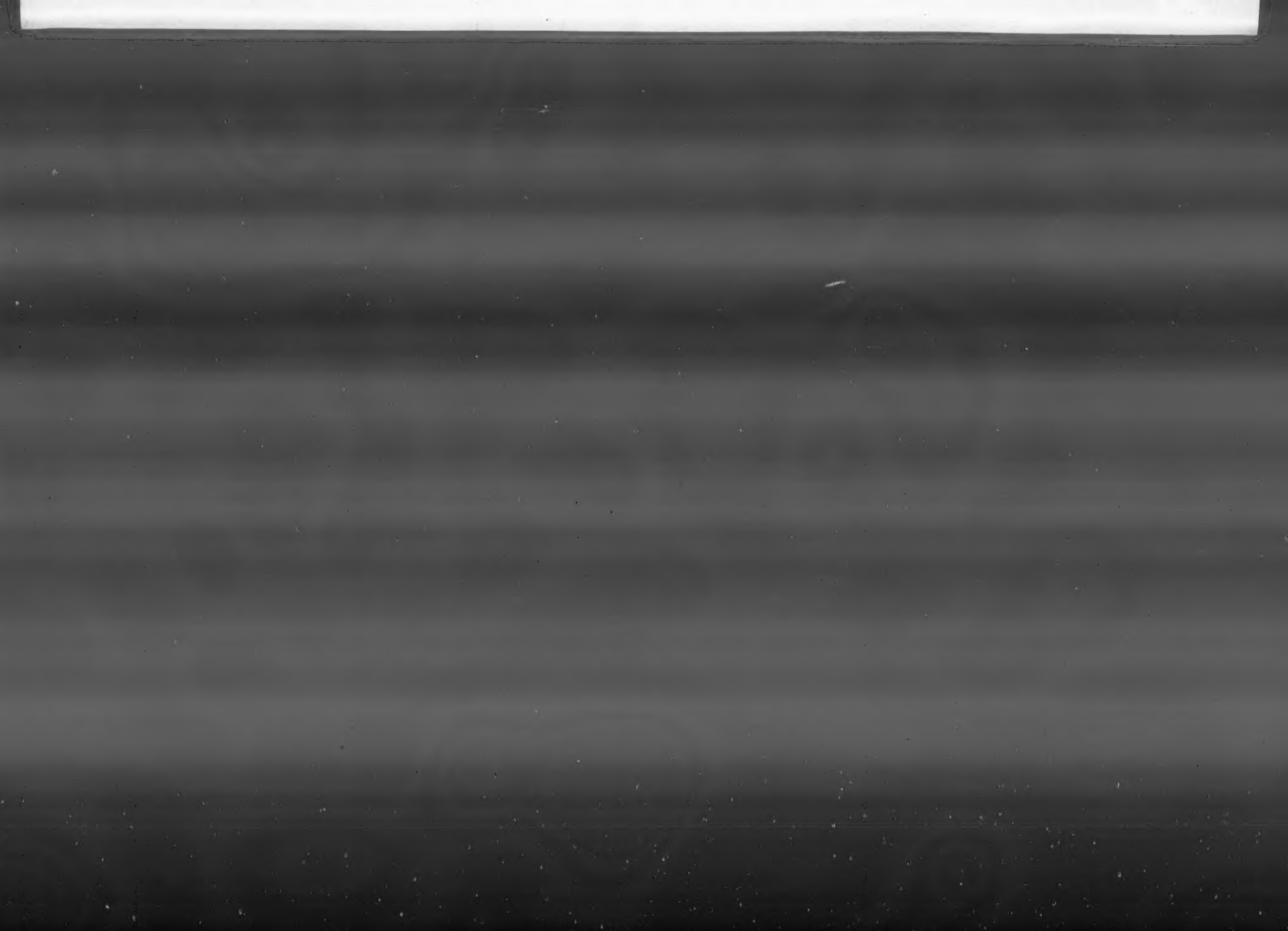

the OIL AND GAS JOURNAL

published weekly by the

PETROLEUM PUBLISHING COMPANY

211 S. CHEYENNE AVE., TULSA 1, OKLAHOMA

Subscription rate to the petroleum industry, United States and foreign, 1 year, $3.00. Single copies, 20 cents. Back copies, when over a year old, 50 cents. Note: Payments from outside the U. S. A. may be in the form of an international money order or check on a U. S. A. bank. Entered as second-class mail matter at Tulsa, Okla., under Act of March 3, 1879.

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Vol. 44, No. 38 January 26, 1946

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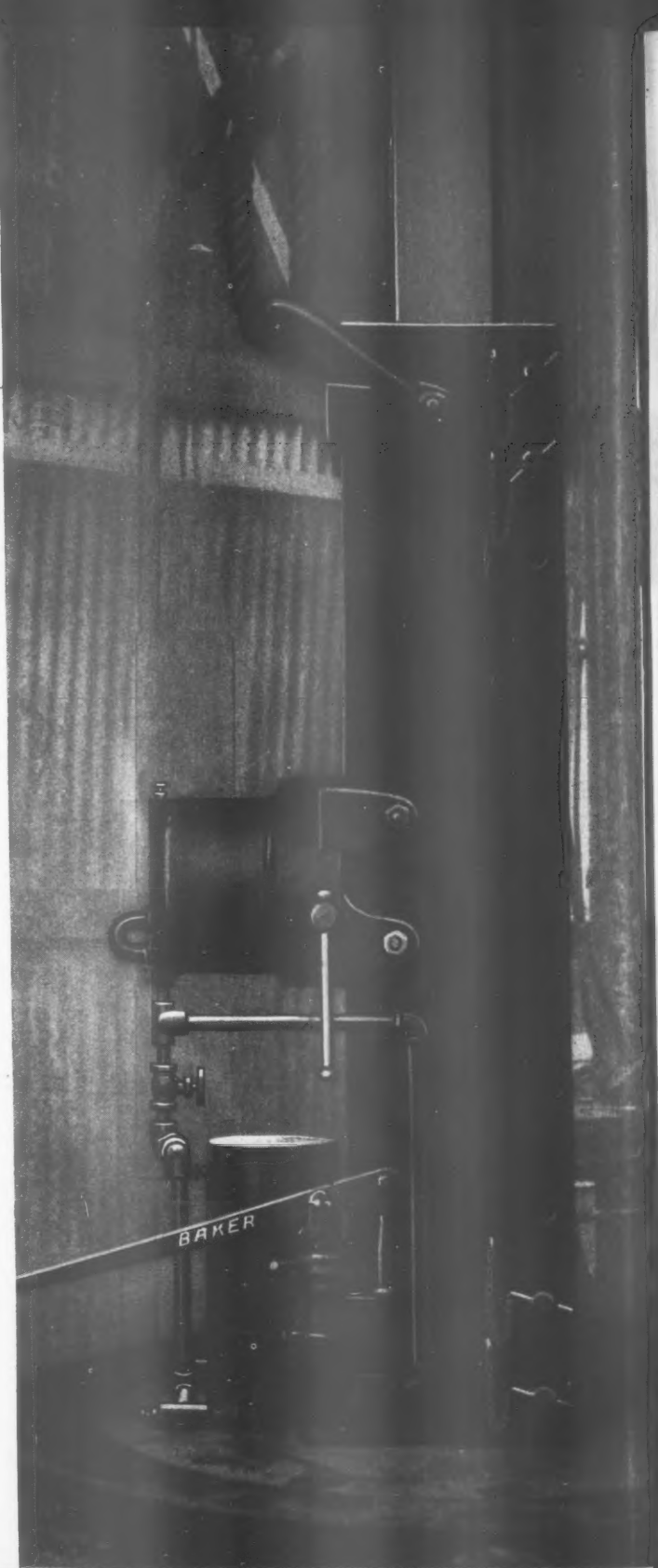


BAKER KELLY STRAIGHTENER

THE OIL AND GAS JOURNAL

Familiar Reports

THERE are familiar reports, reminiscent of the prewar days, in Mid-Continent refinery operations. The gasoline tank-car market has been weak over a sufficient length of time to represent a trend which is a threat to the stability of the domestic gasoline market generally.

The volume of excess material in this instance, as in previous years when similar situations have developed, is not large. The operations of most refineries are in seasonal balance. But scattered supplies coming from a few sources have steadily forced reductions in quotations until the profit margin is nonexistent for those dependent on spot sales.

A controlling factor in the development this year, as predicted on this page previously, has been the continuance of prewar price ceilings. A refinery market which normally moves up and down with seasonal variations in product demands and with the constant basic operating changes within the industry has been frozen at price levels which force unhealthy yields in processing.

The present price relationships, which are now more than 4 years old, place emphasis on maximum gasoline yields. The inevitable result has been that while gasoline supplies are excessive there are shortages in some areas of other products. Most operators have maintained maximum crude-oil runs to stills in order to take care of their customers' requirements for furnace oil and other intermediate products.

There are other contributing causes to the present weakness of gasoline in the interior areas. War requirements greatly expanded the production of natural gasoline and associated products. The large curtailment in 100-octane-gasoline demands has reduced the outlets for these lighter hydrocarbons. An allied development lies in the substantial increase in cycling operations with further expansion assured. Some of these plants have been sources of low-priced motor fuel or blending stock in recent weeks.

These and other causes for present conditions suggest the remedies. Overproducing the industry's money product—gasoline—to supply a minor product is never sound. Don't expect any assistance from OPA. A program which would bring a general reduction in gasoline refinery and retail prices in the face of constantly increasing costs is the administration's conception of the desirable in political strategy badly needed at this time.

The immediate requisites in the operations of this industry are reduction of refinery crude runs to stills and the processing of other liquid and gaseous petroleum products in line with the expected gasoline requirements over the first 6 months of this year. If any deficiencies in other products develop let the government agencies with their insistence of war controls explain the situation to consumers.

Russia Seizes Jersey Properties In Hungary's Lispe Field

NEW YORK.—Commenting on news dispatches from Budapest, Hungary, reporting that the Russian army had confiscated properties of a company affiliate in the Lispe oil field, Frank W. Abrams, board chairman of Standard Oil Co. (N. J.) said that at no time since entry of the United States into war have the properties in Hungary been under American control.

The property of the Jersey Hungarian affiliate, near Lispe, Abrams pointed out, was taken over by the Hungarian Government in December 1941. In February of last year the Russians, who are the occupying power in Hungary, took possession of the field and since then have directed all operations.

Abrams said further that the United States State department will continue to be kept informed of all information the company obtains regarding conditions of the Hungarian property.

Only recently have Jersey officials been able to survey properties in Hungary when a party of American management representatives and technicians obtained entry into Hungary through efforts of the United States State department. Abrams emphasized that the operating program which had been planned for the Lispe field is in accord with the most efficient oil-producing and conservation practices, developed in the United States and in other major oil-producing countries throughout the world.

He stated the practices suggested in Budapest of accelerating all output by permitting gas to escape into the air would leave large quantities of oil underground. The operating program planned by the Hungarian affiliate for these fields would result in recovery of much more oil and prevent excess waste of gas while producing oil too rapidly.

"Prior to the war," Abrams said, "oil was produced from wells at Lispe at the highest rates possible without waste. Plans for developing this field call for saving natural gas produced with oil by recompressing it and returning it underground. Thus, the gas helps to bring more oil to the surface and also is conserved and some day, can be used for heating and other purposes if pipe lines should be available to carry it to the centers of consumption."

The Hungarian affiliate is engaged in production of crude oil. It has no refining facilities.

A dispatch this week from Budapest to the New York Times said the Russians had put in their own geologists and barred Standard's general manager from the field several days ago. Oil from the field is being sent through the company pipe lines to the company refinery where it is being paid for by the Russians, according to the dispatch.

The Russian action was interpreted as disclosing an intention to exploit the field to the utmost without regard to the long-range usefulness, in the expectation that eventually the Russians will be obliged to withdraw their forces from the country. Russians were quoted in the dispatch as saying that American development technique is 25 years behind the times, compared with practices in Russia where 100 per cent of oil is recovered. Standard Oil engineers declared, on the other hand, that by their methods 80 per cent of the oil in the Lispe field might be recovered with care but that great waste would result from the Russian plans.

When the Red army originally occupied Hungary, the Times dispatch said, Russians took over the field and removed much of the equipment. Part of this was restored after a few months, however.

Under terms of the Hungarian reparations agreement with Russia, Czechoslovakia, and Yugoslavia, American property is exempt from seizure or removal, and the Potsdam declaration provided that Russia take only German assets in Hungary, the dispatch pointed out.

Naval "Task Force" Seeks Basis Of Wage-Dispute Settlement

HOUSTON.—Agreements which will allow return of the remaining government-operated refineries and pipe lines seized last October were sought in labor-management meetings in progress here this week under the supervision of a special Navy department "task force."

Naval officers comprising the task force were holding the first of their meetings here with officials of Shell Oil Co., Inc., and Oil Workers International Union. The Washington group, dispatched with definite instructions to bring agreements in the long-standing disputes, are due to go later to the Chicago area for settlement conferences.

Meanwhile, the oil workers union completed contracts with three oil companies in this area. The Texas Co. signed an agreement covering employes at its Galena Park refinery. Other contracts were announced for Maritime Oil Co. and Crown Central Petroleum Corp. They provide for an 18 per cent wage increase.

The Texas Co. Galena Park contract, providing differentials of 4 cents for the evening shift and 6 cents for the night shift, covers about 140 employes. The Crown Central settlement carries a retroactive feature which E. W. Johnson, president of Local 227 of the union, said is the first negotiated in the industry. This provides retroactive pay of 9 cents an hour from January 16, date of the contract, back to the week of August 27 when a 40-hour week became effective at the Crown Central plant.

In the first Navy-sponsored conferences, a pattern was expected to be set for the handling of other meetings throughout the country. The so-called "fringe" issues—those in addition to the 18 per cent wage increase—were reported to be causing difficulty.

Socony Offers 18 Per Cent; Whiting Workers Get Raise

Standard Oil Co. (Ind.) has accepted a government arbitration award for an 18 per cent wage raise for workers at its Whiting, Ind., refinery, while Socony-Vacuum Oil Co., Inc., has offered its refinery employes a similar increase in line with recommendations of the oil panel fact-finding committee.

Standard officials said the award will be the basis of salary and wages adjustment of many other company employes. In accordance with agreements with unions at certain refineries, Standard will automatically grant the 18 per cent increase to employes these unions represent. In other cases where 15 per cent increases have been given through union agreements, the company cannot adjust rates on its own initiative but is ready, officials said, to discuss the subject with the unions concerned.

In announcing the Socony-Vacuum offer, B. B. Jennings, company president, asserted that "ability to pay is not a proper criterion for wage increases," since such a program would retard progress and lead to a lower standard of living.

SPA Would Sell Government's Rubber Plants to Private Industry

by Henry D. Ralph

WASHINGTON.—The Government's synthetic-rubber plants should be sold to private industry promptly as soon as a national rubber policy is set, Surplus Property Administration has recommended in a report to Congress.

The basis for a national policy is expected to be recommended within a couple of months by the Inter-Agency Policy Committee on Rubber, established by Office of War Mobilization and Reconversion. For this reason SPA refrained from making specific recommendations, and its report consists of a brief description of the facilities and the problems involved in their future utilization. SPA is represented on the Inter-Agency Committee, and its report states that as soon as over-all policies have been determined SPA will be prepared to announce disposal plans for plants that are declared surplus.

The report suggests that the national policy probably will be to maintain certain plants under government control as a defense measure, even should natural rubber become cheap and plentiful, but to declare certain facilities surplus and available for sale.

SPA states, however, that there appears to be little reason why plants making specialty rubbers should not be sold to private industry at an early date. These consist of two butyl-rubber plants with a capacity of 68,000 tons per year and one neoprene plant with a capacity of 60,000 tons per year. While not suitable for tires, these rubbers have special properties which make them superior to natural rubber for certain uses. The report says their competitive position is secure and that they therefore are not involved in the decisions based upon considerations of national defense which surround the future of general-purpose, or GR-S type, of rubber.

The butadiene plants using the alcohol process might also be placed on the market at an early date, it is suggested, since their operating costs are so high in comparison with the petroleum processes that they are not likely to find a place in any peacetime synthetic-rubber program. Likewise some of the GR-S plants which will not be utilized in any national-defense program because of location or other characteristics might well be sold for other uses at an early date, SPA says.

No good purpose will be served by long delay in declaring certain facilities surplus and selling them while the market for such materials is good, the report says, although agreeing that most of the rubber plants will need to be kept in operation for a good many months pending an adequate supply of natural rubber and determination of the ultimate competitive position of natural and synthetic for tires. SPA suggests that the quality of synthetic-tire rubber may be increased and its cost decreased by research and competition in private industry.

Prospects Gloomy for Rubber Supply in 1946

NEW YORK.—Dubbed a "famine year" in so far as greater output of rubber is concerned, 1946 prospects, as seen by the Rubber Manufacturers Association, will continue gloomy.

Moreover, A. L. Viles, association president, warns that most sections of the world market will suffer acute shortages of finished rubber products for many months to come—probably extending even into 1947, he adds.

"Relatively low-cost petroleum-base synthetic rubber plants with a proven capacity of between 500,000 and 600,000 tons of GR-S (general purpose synthetic rubber) are currently operating. To this can be added estimated output of 70,000 tons of GR-L (isobutylene) and 30,000 tons of GR-M (neoprene)."

Viles also explains that indications are that basic raw materials requirements of American manufacturers will be met, even though these demands rocket nearly 50 per cent above the 653,000 tons of rubber used in the last full peacetime year, 1940.

"But with natural rubber continuing in tight supply throughout 1946," Viles states, "no wholesale conversions from synthetic rubbers are indicated. Receipts of even as much as 350,000 tons of natural rubber would actually be less than our manufacturers consumed in the critical war year of 1942.

Largely Converted to Synthetic

"It must be noted, however, that the rubber manufacturing industry had converted to use of 88 per cent synthetic rubber by the war's end."

Synthetic rubber having staked its claim to a place among the basic raw materials, the question arose in international discussions as to where the balance may fall between man-made rubber and tree rubber when the great plantations of the Far East again come into full production. That question—tied to such complex considerations as price, labor supply and transportation—is being studied constantly by government and industry.

Statistical Data Now Concentrated

Statistical data on production, drilling, and refinery operations along with market summaries and the trend of petroleum stocks have been concentrated for the convenience of readers. These data appear on pages 310 and 311 in this issue and will appear regularly immediately preceding the Exploration and Drilling Section in subsequent Journals.

Porter Heads Mid-Continent; Edwards Is Tax Chairman

F. M. Porter, Fain-Porter Drilling Co., Oklahoma City, was elected president of the Mid-Continent Oil and Gas Association this week in Tulsa. He fills the unexpired term of the late Judge J. C. Hunter, Abilene.

The directors named Jake L. Hamon, Cox & Hamon, Inc., Dallas, first vice president, and chose six regional vice presidents. They are: E. F. Bullard, president, Stanolind Oil & Gas Co., Tulsa, association vice president for Oklahoma; H. E. Zoller, president of Derby Oil Co., Wichita, for Kansas; George C. Gibbons, executive vice president, Texas division, Dallas, for Texas; A. H. Weyland, president, Arkansas-Louisiana Gas Co., Shreveport, for Louisiana and Arkansas; C. L. Morgan, Dixie Geological Service, Jackson, for Mississippi and Alabama; and Van S. Welch, Flynn Welch & Yates, Inc., Artesia, for New Mexico. Clarel B. Mapes, Tulsa, was reelected general secretary.

Earlier in Fort Worth, Marshall L. Edwards, Skelly Oil Co., Tulsa, was chosen chairman of the state and local taxation committee of the Mid-Continent association at the close of a 2-day meeting of oil company tax representatives. He succeeds F. N. Shriver, Shell Oil Co., Inc., Houston. H. W. Pryor, Arkansas Fuel Oil Co., Shreveport, was named vice president.

Plans Completed for Texas' Case In FPC Investigation

HOUSTON. — Final plans for the Texas presentation before Federal Power Commission in connection with its natural-gas investigation were announced here last week by Charles I. Francis, counsel for the Texas governor's natural-gas committee. The committee is directing the Texas case and will act as host during the Texas hearings.

Francis estimated it will take about 8 or 10 days for the state's witnesses to present Texas' case, and since sessions customarily are not held on Saturday or Sunday, it is probable the hearing will not be concluded before the middle of the second week. The sessions will be held in the Federal Court House beginning January 28.

Aside from the actual hearings, the plans include two dinners and a tour of a Texas gas field and butadiene plant.

Mayor Otis Massey of Houston will be host at a dinner to be held at the Rice Hotel January 28 in honor of FPC members and staff, and the officials of Texas attending the hearings. Visiting attorneys, witnesses, and other visitors participating in the hearing also will attend. Short addresses will be given by Gov. Coke Stevenson, Chairman Olin Culberson of the Texas Railroad Commission, and Nelson Lee Smith, presiding FPC commissioner at the hearings.

February 1, Mayor Massey will be host at a similar affair to entertain the FPC commissioners, its staff and the technical men in attendance at the hearing, particularly the geologists and petroleum engineers, at the Tejas Club.

A group of Houston petroleum engineers has invited the FPC commissioners and staff to visit the Katy gas field, some 30 miles from Houston, one of the most important gas reservoirs in the Houston area and where the most modern cycling operations are being conducted. After a lunch in the field, February 2, the group will be shown through one of the butadiene plants along the Houston ship channel.

As to the hearing itself, the state witnesses are prepared to defend state's rights in the proper regulation of the natural-gas industry, Francis said. They will seek to emphasize their contention that the oil and gas business of Texas should remain in the hands of private industry and that problems of conservation and waste are matters of exclusive state jurisdiction. Attending and taking part in the questioning of witnesses will be the Texas Senate gas-investigation committee headed by Sen. T. C. Chadick of Quitman.

The governor's steering committee, which has planned the state's case, includes: Culberson of Austin, chairman; Maston Nixon of Corpus Christi, vice president, Southern Minerals Corp., vice chairman; R. C. Kay of Amarillo, president, Panhandle Producers' and Royalty Owners' Association; D. A. Hulcy of Dallas, president, Lone Star Gas Co.; A. H. Rowan of Fort Worth, oil and gas operator and drilling contractor; Francis, Houston attorney; J. S. Bridwell of Wichita Falls, independent oil and gas producer; E. DeGolyer of Dallas, DeGolyer & MacNaughton; Rex Baker of Houston, general counsel, Humble Oil & Refining Co.; George A. Hill, Jr., of Houston, president, Houston Oil Co. of Texas; B. G. Byars of Tyler, independent oil operator, and Paul Kayser of Houston, president, El Paso Natural Gas Co.

Smith Will Preside

Commissioner Smith will preside at the hearing and it is understood that Commissioner Harrington Wimberly, and Richard Sachse will sit with Commissioner Smith. Chairman Leland Olds of FPC has not informed the Texas committee definitely as to whether he will be able to attend. Marvin Farrington will sit with the commissioners as trial examiner.

This will be the first of the natural-gas-investigation hearings at which Burton Behling will be in charge of the FPC investigating staff, he having recently replaced George Slaff in this position. Likewise, it will be the first time that Frank Fields will head up the FPC investigation legal staff.

The following appearances are scheduled to be heard by the FPC during the Texas hearing:

1. Welcome, Mayor Massey of Houston.
2. State Rights and the Natural-Gas Industry, Governor Stevenson.
3. The Texas Position With Regard to Federal Regulation of Gas Production and Gathering; and the Gas Conservation Policy of the Texas Railroad Commission, Chairman Culberson.
4. Progress in Oil and Gas Conservation by the Texas Railroad Commission, Col. Ernest O. Thompson, Texas Railroad Commission.
5. Economic Aspects and Benefits of Natural-Gas Industry to the State of Texas, Hon. Beauford Jester, Texas Railroad Commission.
6. Texas Gas Conservation Laws, Regulations, Legal Decisions and Related Matters, Hon. Grover Sellers, attorney general of Texas.
7. Problems of Natural Gas and Fundamental Principles Which Should Guide Their Solution, Dr. E. DeGolyer.
8. The Producers' Viewpoint, Maston Nixon.
9. The Free Play of Economic Forces in the End Use of Gas, Col. George A. Hill, Jr.
10. Interstate Gas-Transmission Lines, N. C. McGowen, president, United Gas Pipe Line Co., Shreveport.
11. Transportation and Use of Gas in Texas, D. A. Hulcy.
12. The Land and Royalty Owners' Viewpoint, R. C. Kay.
13. The Interest of Texas Schools in Our Oil and Gas Resources, Dr. L. A. Woods, State Superintendent of Public Instruction, Austin.
14. Natural-Gas Industry of Texas—The Public Interest, George H. Fancher, professor of petroleum engineering, University of Texas, Austin, and Harold Vance, head of petroleum engineering department, A. and M. College, College Station.
15. The Consumers' Viewpoint, Hon. H. P. Kucera, city attorney, Dallas.
16. Natural-Gas Prices and Conservation, Dr. Richard J. Gonzalez, economist, Humble Oil & Refining Co., Houston.
17. Production and Utilization of Gas From Gas Wells, L. T. Potter, Lone Star Gas Co., Dallas.
18. Casinghead Gas—Production and Conservation, Stuart E. Buckley, Humble Oil & Refining Co., Houston.
19. Natural Gasoline and Conservation, M. L. Mayfield, secretary, the Natural Gasoline Committee of PAW, District 3, Houston.
20. Cycling Plants, Robert T. Wilson, president, LaGloria Corp., Corpus Christi.
21. The Use of Gas for Carbon Black, E. M. Eckhart, vice president, and Dr. Ira Williams, director of research, J. M. Huber Corp., Borger.
22. Conversion of Dry Natural Gas to Liquid Fuels, R. C. Alden, director of research, Phillips Petroleum Co., Bartlesville, Okla.

Output of 2,126,504 Bbl. Is Indicated for Texas

AUSTIN. — Crude production in Texas at a daily rate of 2,126,504 bbl. in February is indicated by an order of the Texas Railroad Commission. This represents an increase of 236,504 bbl. over a Bureau of Mines forecast.

Under the order, average daily allowable is set at 2,244,331 bbl., but an underproduction of 5.25 per cent is expected.

Production of 168,097 bbl. daily of natural gasoline and distillates will increase the total liquid petroleum production to 2,294,601 bbl. daily, or 404,601 bbl. over the Bureau of Mines estimate.

Comparison by districts of average daily crude-oil allowables for January 12 and February 1, with net changes, are:

Southwest Texas, 21,491, 21,582, up 91; Southwest Texas, 139,725, 154,746, up 15,021; Gulf Coast, 474,581, 526,651, up 52,070; Southwest Texas, 230,901, 240,742, up 9,841; East Central Texas, 40,040, 45,086, up 5,056; East Texas (outside), 104,288, 105,330, up 1,042; East Texas (proper), 323,945, 324,467, up 522; West Central Texas, 37,469, 37,719, up 250; West Central Texas, 29,114, 29,488, up 374; West Texas J., 498,566, 511,498, up 12,932; North Texas, 146,542, 148,048, up 1,506; Panhandle, 99,323, 98,974, up 351.

THIS WEEK

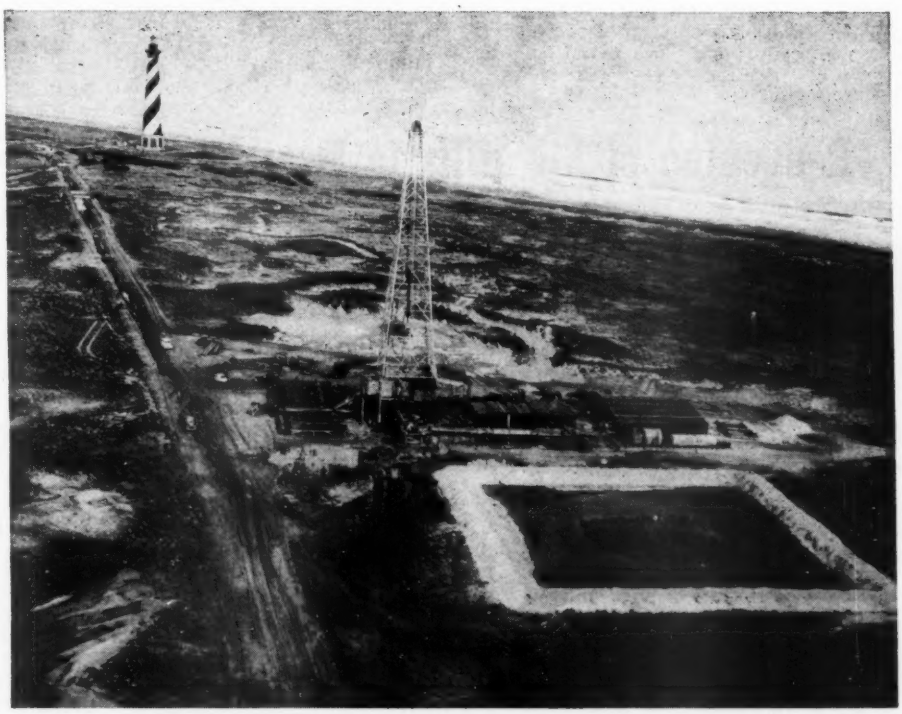
SHORTAGE—Acute shortage of fuel oil and kerosene moves Davies to urge refiners to adjust yields and inventories to provide increased volume of these products. . . . Says military faces "extremely critical situation." . . . ¶Production at Elk Hills to be partly resumed to help meet the emergency. . . . Its crude yields maximum of fuel oil and minimum of gasoline and other light fractions. . . . To meet Army and Navy need of storage SPA approves storage of 2,000,000 bbl. of 100-octane gasoline in Baytown-Beaumont gathering-line tankage of little big-inch line. . . . Action may avert heavy cut in crude runs, with consequent serious effect on output of residual fuel oils

UNEASY—"Immediate, positive action" imperative if independent producers are to stay in business, declares B. A. Hardey, president I.P.A.A. . . . Misunderstanding by administration in Washington, short-sighted policy of purchasing companies, and excessive imports are forcing liquidation of producers. . . . Regulation of oil prices "without justification." . . . Only remedy for producer's predicament is "removal of price ceilings so industry can function in normal manner." . . .

LABOR—"Task force" from Navy meets Shell Oil representatives in Houston in effort to settle 4-month-old wage dispute. . . . Officials of union also attend. . . . After Shell conference the "task force" to move to Beaumont-Port Arthur area to clean up contracts with Magnolia, Gulf, and Texas Co. plants. . . . ¶Crown Central and Maritime Oil follow Sinclair in ending controversy by signing for wage increase of 18 per cent. . . . Texas signs for its Galena Park plant. . . . ¶Belief expressed that entire difficulty, which moved Government to take over 53 strike-bound plants and pipe lines last October, will be adjusted soon. . . . ¶Settlements reached by major refiners on basis of 18 per cent are seen as likely to increase worries of unintegrated companies, with smaller financial resources.

NATURAL GAS—State rights to be warmly defended at FPC's regional hearing in natural-gas investigation, starting at Houston next Monday. . . . Expected to take 10 days for Texas witnesses to present their testimony. . . . Thompson and Jester, of Railroad Commission, to insist that jurisdiction over production, processing, and sale of gas should remain with state. . . . ¶RFC announces Lake Charles natural-gas system, now operated by Union Sulphur Co., is for sale or lease. . . .

DENIAL—Report from Budapest quoting Russians as saying American development technique in Lispe oil field is "25 years behind the times, compared with Russian practice" impels F. W. Abrams, board chairman of New Jersey Standard, to say his company's affiliate, which has important holdings at Lispe, had adopted program "in accord with most efficient oil-producing and conservation practices." . . . ¶Properties have not been under American control since United States entered war. . . . Russia, the occupying power in Hungary, took possession of the field last February and have operated it since then. . . . ¶Only recently have Standard officials been able to inspect the properties, when they gained access through efforts of State Department. . . .



Close by the historic 197-ft. lighthouse at Cape Hatteras, N. C., rises the towering 168-ft. rig of Standard Oil Co. (N. J.) 1 Esso, where drillers have reached more than 3,000 ft. in a search for oil on the East Coast. Standard well is first to be drilled on a large block of oil-leased coastal lands in the vicinity of Buxton, N. C. The well site faces the stormy cape, known to mariners for generations as "the graveyard of the Atlantic." Drilling of the well followed more than 2 years' study of the Atlantic Coastal Plain region by company geologists. The project is entirely experimental and intended primarily to obtain sufficient geologic information to serve as a guide in further exploration of the Coastal Plain area. The drilling is expected to continue to a depth of 8,500 ft.

New Venezuela Tax Labeled "Unexpected" and "Disturbing"

WASHINGTON. — Venezuela's sudden decision to impose an excess-profit tax of approximately $10,000,000 on United States and British oil companies is not only "entirely unexpected" but is "highly disturbing"—particularly when these taxes were imposed without warning and at the year's end.

This was the consensus here this week of oil companies operating in Venezuela.

The official government explanation of the unexpected tax move was made in a signed statement, given to the Oil and Gas Journal by Dr. Juan Pablo Perez Alfonzo, minister of fomento, and appeared in last week's issue, page 58.

The tax not only affects profit and loss statements, one source said, but some companies have found that they declared dividends out of line. This means that they will have to seek methods of augmenting their cash positions to take care of 1946 requirements, it was said.

Moreover, this action by Venezuela's new revolutionary government may result, in some cases, in widespread plans to hold back large operating investments, particularly in refinery programs, another source believed. Plans made for 1946 may have to be postponed until 1947, and maybe even later if this tax imposition for 1945 is repeated for 1946—and some sources believed that the Venezuelan Government has set a precedent for future years. "Who can tell?" was the philosophical comment of this same source, who said he'd not be at all surprised to see it broadened at the end of this year.

"We're dumfounded and surprised," was the way still another source prefaced his statements, adding that it's a major tax assessment; that it's a major influence on U.S. investments in Venezuela; and that it's bound to reduce the incentive to invest foreign capital in that country. However, this same source hastened to state that there is still the opportunity to make a fair profit and "there's no use getting mad about it."

The action, apparently was taken at a cabinet meeting one day and announced publicly the next day, without giving anyone the chance to appear at an open hearing, one oil man said, explaining that it was unfortunate as company dividends had already been made. Foreign companies operating in Venezuela are reported to be giving it intense study, particularly in their Venezuelan offices, with an eye to what this excess-profit tax means in future operations. It's a very serious move, all companies indicate.

Reopening of Elk Hills to Meet Navy Fuel-Oil Requirements Urged

LOS ANGELES.—At an emergency meeting held in Los Angeles at the urgent solicitation of PAW and the Navy Department, it was agreed that unless partial production is resumed at Elk Hills, California will be unable to completely fill Navy fuel-oil requirements during the first 3 months of 1946. Ralph K. Davies, deputy petroleum administrator, informed a group of California refiners early in January that it would be necessary to increase the supply of 25-viscosity Navy oil from 64,000 bbl. daily to 106,000 bbl. in order to meet Navy demands in the first quarter. After a general canvass of the situation, some relief was obtained several days later by individual contact with major and minor refiners. Refiners agreed to furnish about 17,000 bbl. of the additional 42,000 bbl. needed to fill daily requirements, leaving a deficit of about 25,000 bbl. per day.

In order to meet Navy fuel-oil demand in full, it would have been necessary to step up California crude-oil production from 840,000 bbl. daily to a minimum 890,000 bbl. per day with a corresponding increase in refining operations. After a review of prevailing conditions, it was found that California is producing at the maximum efficient rate and therefore any increase in production would prove detrimental and wasteful. Because of this, it is extremely doubtful that the California Conservation Committee will make any substantial change in the production quota. It is evident, therefore, that the Navy must rely on Elk Hills to make up any deficit even though this would require congressional action.

The increase in Navy fuel-oil requirements reflects the so-called magic carpet program of bringing military personnel home on combat vessels. It was pointed out that combat vessels consume substantially more fuel oil, of a special type, than ordinary transport ships. Some relief might be had by restoring rail shipments of crude oil from Texas to California but this would only be a temporary expedient especially since the shortage will not be entirely over by the end of March 1946. Some special Navy oil is still being moved into California and the Pacific Northwest from areas outside normal Pacific Coast territory but the amount has been drastically reduced since V-J Day.

Representatives of General Petroleum Corp., Richfield Oil Corp., Shell Oil Co., Inc., Standard Oil Co. of California, Tide Water Associated Oil Co., The Texas Co., Union Oil Co., Hancock Oil Co., Mohawk Petroleum Corp., Rothschild Oil Co. and Wilshire Oil Co. said they would drown in the flood of gasoline resulting from the processing of enough crude oil to yield the required amount of fuel even though the Navy agreed to increase purchases of gasoline to alleviate conditions as far as possible.

H. K. Porter Co. Buys Hinderliter Controlling Stock

The purchase of the controlling stock interest in the Hinderliter Tool Co., Tulsa, a large manufacturer of specialty equipment for the oil fields, by Thomas M. Evans, president of H. K. Porter Co., Inc., Pittsburgh, was announced Tuesday by Frank Hinderliter, president and founder of the company which bears his name. The sale of the stock interest will not involve any change in the management or policies of the company.

Evans is a member of the Mellon family of Pittsburgh and through the Porter company is a substantial manufacturer of equipment and materials used in all divisions of petroleum operations. Among the companies controlled by the Porter organization are J. P. Devine Manufacturing Co., Quimby Pump Co., and Fort Pitt Castings Co.

It was stated that the present manufacturing facilities of the Hinderliter company would dovetail into the operations of the Porter company in expanding the equipment available for operations in the petroleum industry. The Hinderliter company has a large plant in Tulsa manufacturing tool joints, fishing tools, control heads, and other specialties.

Independent Operators Face Peril Of Extinction, Says Hardey

SHREVEPORT.—If independent oil producers of the nation are going to stay in business they will have to adopt an immediate and positive program of action, according to Independent Petroleum Association of America, which expressed its views in a statement issued by B. A. Hardey, president, following a meeting here January 15-16 of the executive committee and state vice presidents.

The meeting outlined a vigorous approach to the question of an adequate price for crude oil, and for an early solution of other problems confronting the independents. On the question of imports it was recommended by resolution that an early conference be called with government men and representatives of the industry and of oil-producing states to formulate a sound import policy.

The meeting reaffirmed a prior endorsement of the Anglo-American oil agreement now pending before a Senate committee and urged its ratification. The midyear meeting of the association will be held April 29 and 30 and May 1 in Houston.

"The oil industry," says Hardey in his statement, "is suffering from misinterpretations and misunderstanding on the part of the administration in Washington, and a short-sighted policy on the part of oil-purchasing companies. This, coupled with excessive imports has brought about a situation which is rapidly forcing the liquidation of the oil producer, who must depend solely on the stability of the domestic industry for his continued existence. Unless the situation is corrected immediately the petroleum industry will inevitably become a monopoly. This is contrary to the fundamental principles of free enterprise.

"Regulation of prices in the oil industry where the supply is in excess of demand is without any justification. Demand automatically maintains a correct price. Normal competitive conditions will protect the consumer. Under the present Office of Price Administration policy the consumer has been unable to secure needed supplies of certain petroleum products. The shortage of fuel oil, heating oil, and kerosene is not because of any lack of crude oil or refining capacity, but has been brought about by disrupting the normal laws of supply and demand.

"Generally unknown is the fact that these maladjustments in the prices of refined products are causing an equal maladjustment in refinery products. A heavy inventory of gasoline is being built, with a parallel decrease in stocks of heating oils, kerosene, fuel oils, etc.

"The only solution is the removal of price ceilings so that industry can function in a normal manner. However, until this has been accomplished, the state regulatory bodies and the Interstate Oil Compact Commission should give consideration to actual consumptive demands instead of nomination of the purchasing companies.

"The current increase in reports of foreign crude has reached a figure that is alarming to the crude-oil producer here at home. Removal of price ceilings would take this added burden off the shoulders of the American producers.

"The producer is receiving a price for oil which is only a part of the replacement cost. He cannot continue to exist under these conditions. He produced during the war all the oil that was needed, even though the price was unfair, and in many cases the rates of production were so high as to cause an actual loss in ultimate production. He is now rapidly reaching the point where he must decide whether he should continue to liquidate his property slowly in order to last as long as he can, or simply shut down his wells now."

Refiners Asked to Adjust Yields to Provide More Kerosene, Heating Oils

WASHINGTON.—Requests that the refining industry adjust yields and inventories and make special efforts to provide sufficient kerosene and heating oils to meet current abnormal demands have been made by Deputy Petroleum Administrator Ralph K. Davies.

The deputy administrator asked the supply and transportation committee of District 1 on January 14 for a study of inventories and arrangements to exchange products to avoid maldistribution of available supplies. January 16 he sent a telegram to the supply and distribution committees of Districts 1 and 3 pointing out the need of the Army for additional kerosene for relief needs in Europe and asking refiners to assist in locating this product. The telegram follows:

"Our military face an extremely critical situation with respect to kerosene requirements for first quarter 1946. Army requirements for kerosene in European and Mediterranean theaters are as follows: December 1945, 135,000 bbl.; January, 140,000 bbl.; February, 60,000 bbl.; March, 60,000 bbl. Continual representation by military to industry to provide these requirements secured availability of only 30,000 bbl. to meet December requirement and 60,000 bbl. to meet January requirement. This leaves deficit of 105,000 bbl. against December requirement and 80,000 bbl. against January requirement, or total of 185,000 bbl. In addition UNRRA has placed requirement of 70,000 bbl. with Navy for January of which no product is yet in sight. UNRRA will also require 57,000 bbl. monthly in February and March.

"I urgently request assistance of supply and transportation committees in Districts 1 and 3 in obtaining this relatively small but critically needed quantity of kerosene. We have been hopeful that the military would succeed in obtaining these supplies, but thus far their efforts have met with no success. It is of highest importance that these military needs be made available for immediate lifting, and I know that we may count upon your committees, working together and with the supply officials of the various companies, to locate this product for the military."

Truman Nominates Pauley As Navy Under Secretary

WASHINGTON.—Edwin W. Pauley, California oil man and former treasurer of the Democratic National Committee, has been nominated by President Truman as under secretary of the Navy, presumably to understudy Secretary James V. Forrestal who has announced his desire to retire from the Government at an early date.

Pauley will succeed Artemus L. Gates, who resigned recently. For the past several months Pauley has been serving as head of the Reparations Commission and has just returned from the Far East.

Political observers say that this appointment foreshadows early retirement of Harold L. Ickes as secretary of the interior. Gossip is that Pauley had been promised the first cabinet post to become vacant and that he wanted the interior job but since it was considered politically inexpedient to put an oil man in this post, Ickes was persuaded to stay until something else opened up for Pauley.

INTERNATIONAL

New Association Holds Initial Meeting

BOGOTA. — Initial meeting of 1946 of the Foreign Oilfield Material Men's Association of Colombia was held here January 8 with C. A. Lamprich, chief, material department, Shell Petroleum Corp., speaking on "Material Control."

Those present at the meeting and shown in the photograph were: (front row) D. M. Stratton, Colombian Gulf Oil Co.; G. M. Bayne, Shell Petroleum Corp.; K. Paris, Texas Petroleum Co.; L. R. Morris, Richmond Petroleum Co., R. N. McConnell, Richmond Petroleum Co.; (standing) C. A. Lamprich, Harry F. Simons, Guy E. Daniels Co.; V. W. Tryon, Tropical Oil Co.; Wyman S. Calmes, Colombian Gulf Oil Co.; I. W. McCoy, Texas Petroleum Co., chairman of the group; Dan D. Conway, Tropical Oil Co., and J. G. Youngblood, Texas Petroleum Co. Vice chairman of the association is D. G. Parks, Socony-Vacuum Oil Co. of Colombia, presently on leave.

Organized in September

The association was organized in September 1945 for the purpose of exchanging information on the various problems of supplying materials to oil-company operating personnel in the field. Since most material departments include transportation of equipment and personnel as well as keeping them supplied with tools and necessities of life in an area which has very little communication facilities, the problems of the material men are both numerous and troublesome.

An idea of some of the problems can be gained from the topics discussed at previous meetings: "Transportation Routes in Colombia," by M. M. Briscoe, head of material department, Tropical Oil Co., Bogotá; "Air Transport in Colombia," by Fr. Martin del Corral, president Avianca, Colombia's leading airline, and "River Transportation Difficulties," by D. G. Parks.

In view of the close contact between the material departments and the accounting departments, a member of the latter department of each oil company is invited to meetings held on the first Tuesday of each month. In addition, representatives of manufacturers of oil-field equipment are invited to all meetings.

Venezuelan Decree Cuts Gasoline Price in Half

CARACAS.—The price of gasoline in this and many other Venezuelan cities has been cut in half by a joint resolution of the Ministries of Interior and Development which was published November 2 in the "Gaceta Oficial."

Creole Petroleum Corp., largest producing company in Venezuela and the world and one of the major marketers in Venezuela, issued this statement after analyzing the price decree:

"The Government has taken an unprecedented step in reducing the price of gasoline 10 centimos of a bolivar (3 cents) per liter (0.2642 gal.) This measure represents a reduction of half the present price of gasoline in Caracas and many other cities of the country. The decree is of major importance for two reasons. First, never has there been such a substantial decrease made in the price of gasoline anywhere. Second, this is the first time, to our knowledge, that a government has lowered the internal consumption tax on gasoline on its own initiative. In most other countries, the tendency regarding gasoline taxes constantly has been to increase them, resulting in elevated operation costs of buses, trucks, automobiles and rental cars.

"This tax, together with the reduction the oil companies will make in the wholesale price, plus the ½ centimo reduction made by the filling station operators on each liter sold, will result in Venezuela retailing gasoline at the lowest price in the world. It is possible to transport this gasoline in tankers to Gulf ports in the southern part of the United States and sell it there with a better profit than in Venezuela. In the United States, where gasoline is considered cheap, the current retail price is 15 centimos per liter.

Effect on Cost of Living

"It is to be hoped that the price reduction of gasoline will help reduce the cost of living, and if it does, Creole will feel more than compensated for having collaborated, even to the deriment of its own profits.

"As we have already said, the decree of the present government stipulates that the distributors in the gasoline stations must contribute ½ centimo of their profit on each liter sold to the general reduction. At first sight this sum seems insignificant, but we believe the public will realize that this represents a reduction of 16⅔ per cent of the operator's profit per liter of gasoline.

"This decree also orders a reduction of 2½ centimos per liter in the price of kerosene. This coincides with an offer made by the oil companies to the government in the hope that a reduction in the price of kerosene would be beneficial. The companies, therefore, have lowered the price of kerosene 1½ centimos of a bolivar, at the same time requiring the kerosene dealers to reduce their profit ½ centimo per liter."

I.S.A.P. Prepares for Oil Congress in 1947

A meeting of the Permanent International Council of the South American Petroleum Institute (Instituto Sudamericano del Petroleo) took place in Santiago, Chile, January 16-20. One of the chief developments at the meeting was the discussion of final plans for the First South American Oil Congress, to take place in Lima, Peru, in January 1947. Other topics of interest included possibilities for standardization of methods for analyzing oil and its derivatives, oil statistic systems, nomenclature used in the oil industry and volumetric units of measure of oil products.

A group of technicians connected with the oil industry in Argentina, Bolivia, Ecuador, Peru and Uruguay attended the sessions.

M. A. WRIGHT R. J. SULLIVAN C. G. HERRINGTON

Carter's Engineers Involved in Transfers

Transfer of M. A. Wright, assistant manager of the production department of The Carter Oil Co., from Tulsa to New York to be the company's representative there, was announced last week by O. C. Schorp, president.

R. J. Sullivan, Mattoon, Ill., superintendent of Carter's eastern division, has been named to Wright's position in Tulsa.

C. G. Herrington, chief production engineer, will succeed Sullivan as superintendent of the eastern division and A. R. West, Billings, Mont., division engineer of Carter's Northwest division, replaces Herrington. M. C. Sons, petroleum engineer in the Tulsa office, goes to Billings as Northwest division engineer.

Wright was graduated from Oklahoma A. and M. College in 1933. He went to work for Carter in the Seminole district, became division engineer in 1939, was division engineer at Shreveport in 1941 and in 1943 was moved to Tulsa. He has served as petroleum engineer, chief engineer and assistant manager of the production department.

Joined Carter in 1934

Sullivan was graduated from Notre Dame in 1931, took special work in petroleum engineering and geology at the University of Oklahoma and began work for Carter in 1934 in the Burbank field as roustabout. After serving in the Burbank district, western Oklahoma and Kansas and the Tulsa office, he went to Mattoon as division engineer in 1938, was made assistant division superintendent and 2 years ago became division superintendent.

Herrington completed his engineering studies at Oklahoma A. and M. College in 1934 and began work for Carter as roustabout in the Crescent area. He spent a year in the tax department, Tulsa, went to Ponca City for general engineering work in 1936, moved to Mattoon in 1938 and served as assistant division engineer before going to Seminole in August 1941 as division engineer, and assistant division superintendent. He was transferred to Tulsa in the spring of 1944.

West joined Carter in July 1930 immediately after graduating from the U. S. Naval Academy. A year later he went to El Centro, Colombia, South America, with a Jersey Standard subsidiary. He returned to Oklahoma City in 1937, worked in the Seminole and Wilson districts before becoming division engineer at Seminole in 1939. In January 1943 he went to Cut Bank, Mont., as division engineer and has been at Billings in that capacity since November 1943.

U.S. Tanker Fleet Includes 955 Vessels

NEW YORK. — Tanker deliveries, ocean and coastwise, for the last 4 months of 1945, totaled 48, bringing the United States tanker fleet to 955, according to the American Bureau of Shipping.

Of the 48 additional deliveries, 32 were ocean-going vessels. Broken down into months, with the number of ocean-going and coastwise deliveries, the following table summarizes tanker activity for this period:

Month—	Ocean-going	Coastwise	D.W.T.
September	7	3	127,494
October	18	5	325,754
November	5	5	102,608
December	2	3	48,580
Total	32	16	603,436

At present seven tankers are under construction, the American Bureau of Shipping reports. Two are being built for Standard Oil Co. of California by Sun Shipbuilding & Dry Dock Co., and the five others for the Navy.

In a detailed report on the world tanker fleets, Bendict Saurino, of Sun Shipbuilding, presented a chart of these fleets (Journal, December 29, page 182), giving statistical positions by countries, as of September 1, 1945.

The United States tanker fleet total of 955 deliveries, as of January 1, 1946, contrasts with Great Britain's total of 399. However, the 399 figure is of September 1, 1945, a tanker official pointed out, stating that "since V-J Day the British have clamped down on this type of information."

Although the continued use of the vast majority of United States tankers will depend on world economics, the American Shipping Bureau pointed out, there is "practically no such thing as a surplus of tankers at the present time." Very few are laid up. A shortage of tonnage currently exists, but the main trouble with the present tanker situation is lack of crews. On January 14 the War Shipping Administration reported only 10 tankers held up at eastern ports owing to lack of crews. For this same date only two tankers were held up in New York as against eight on January 11. Three tankers were held up at Philadelphia and three at Baltimore on November 14.

On March 2 the United Maritime Authority, composed of practically all of the Allied Nations, along with Sweden and some South American countries, is scheduled to go out of existence. This agency was established to gain the most efficient utilization of all vessels, including tankers. On March 2 all vessels will revert to their original owners.

Report on Detroit Case Is Approved by N.C.I.P.A.

CHICAGO. — Unanimous approval was accorded by the National Council of Independent Petroleum Associations, meeting in Chicago, of a report for submission to Federal Trade Commission on the council's view of the commission's decision in the Detroit case, involving Standard Oil Co. of Indiana, as it affects the oil industry. The report was prepared by a special committee named to study the commission's finding.

Hugh L. Thatcher, chairman of the council, was authorized to transmit the report to the commission.

FTC's decision, declares the council's statement, contains implications that "threaten to destroy the legitimate marketing structure by which petroleum products are distributed and to imperil the existence of jobbers, who perform a recognized and necessary function."

The report was made in response to a request by the commission that the council file a brief in support of its statement that the decision might have an injunction effect on independent oil jobbers.

The order in the case, which has not yet been made effective, would prevent a supplier from selling gasoline to jobbers at a price substantially lower than to retailers in the same area if the jobber also sells at retail.

Engineers Leave for China To Aid Oil Development

NEW YORK.—Preparing to undertake a vigorous program of oil development in China, which will involve geological exploration, geophysics and drilling, the National Resources Commission of China stated here late this week that the most modern methods will be utilized.

Two engineers from the United Engineering Corp., S.A., have been assigned to this project. They are: Glen M. Ruby and Arthur D. Small, vice president and chief petroleum engineer, respectively. Two representatives of Universal Oil Products Co., assigned as refinery consultants, are Dr. Gustav Egloff, authority on petroleum refining technology, and W. B. Shanley, chemical engineer.

Egloff and Shanley will make a preliminary study of the petroleum-refining facilities and needs of China and will make recommendations for a program to: (1) Improve operations of refineries now running; (2) place in operation shutdown refineries which can be operated; (3) make repairs, modifications, and replacements as needed to refineries damaged during the war; (4) coordinate and expand the refining facilities for present and future needs of China.

United Engineering Corp., S.A., has entered into an agreement with the National Resources Commission of China to review the possibilities of increasing Chinese production. The only production there now is in the Kansu Province where there is reported to be only one refinery operating. The production, however, is practically negligible.

The mission left for China, by plane, last week to undertake this work. The engineers will visit many of the areas there where petroleum has been produced and where geological conditions are known to be favorable for a possible development of production.

A number of engineers prepared reports on the petroleum possibilities of China during the war. Among those making reports were Ruby and Small, who will refresh their reports and consult with many of the Chinese engineers who have been responsible for the development program undertaken to date. Recommendation will then be made to the National Resources Commission on an operating program designed to increase the production, with particular emphasis on exploratory work in favorable areas close to the centers of population.

The Chinese commission, it is believed, will employ a number of senior American engineers to supervise operations under the direction of the commission.

A large number of Chinese engineers have been sent to this country to work with American oil companies in order to learn the most up-to-date drilling and production methods. This group of engineers is now acquiring valuable practical experience which will be used to good advantage in developing the petroleum resources of their own country.

United Engineering Corp., S. A., is represented in the United States by the firm of Hoover, Curtice & Ruby, Inc., New York.

G. M. RUBY

A. D. SMALL

DR. G. EGLOFF

W. B. SHANLEY

Stripper-Subsidy Program Continuance Under Study

WASHINGTON.—A report on the stripper-well premium-price crude-oil subsidy is now before John C. Collet, administrator of economic stabilization, who is expected to make a decision shortly as to whether the plan should be continued.

Several months ago, Reconstruction Finance Corp., which pays the subsidy, asked the stabilization office, which originally approved it, for a re-examination now that the war is over. OES asked the Interior Department for a special study, and this has been completed and presented together with other data prepared by the OES staff.

Index Ready Soon

The complete editorial index of The Oil and Gas Journal for 1945 is now is preparation, and will soon be ready. Due to the continued shortage of paper, it will not be published in a regular issue. The complete index, enlarged and improved and with more cross-references, bound separately, will be sent without charge to all subscribers requesting a copy. Address requests to Circulation Department, P. O. Box 1260, Tulsa.

DEATHS

Frank P. Lyons, 71, former rig-building contractor, died January 14 at Bradford, Pa.

Maj. J. Stewart Slack, Jr., petroleum engineer for Standard Oil Co. of Louisiana in Shreveport before the war, is presumed dead, according to an official War Department message. He had been missing since January 6, 1945, when he participated in a raid on Japan.

H. A. Schramm, 51, head of the crude-oil purchasing department of Kanotex Refining Co., at Arkansas City, Kans., died January 15 in Winfield.

George Myers Church, 54, West Texas oil operator who drilled the discovery well in the Church and Fields pool in Crane County, Texas, in 1926, died January 16 in Fort Worth. Church, a Princeton graduate, was a top-flight tennis player three decades ago. With Dean Mathey he won the All Comers' Tournament in 1914. In 1916 he toured the Orient, playing in many matches. In the same year he was defeated in the national championship at Forest Hills. In 1917 he established the Church Cup matches.

Oscar James, Sr., 60, drilling contractor, of Houston, died January 16.

Emil G. Deprade, 40, Oklahoma City, attorney for Phillips Petroleum Co., died January 18 of injuries suffered in an automobile collision. Mrs. Deprade met death in the same accident.

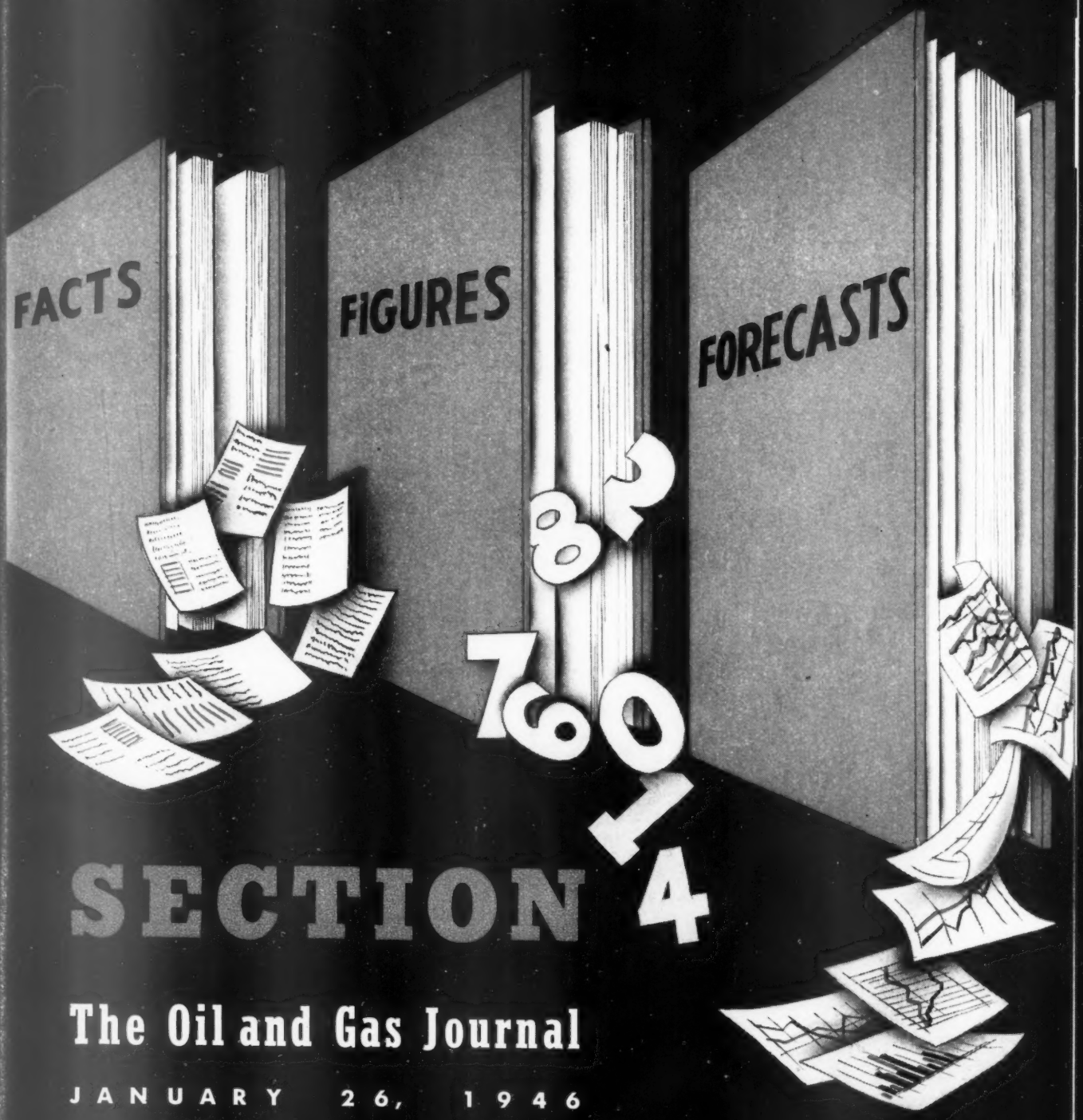
Charles Borland, 68, president of Federal Electric Co., died January 3 in Charleston, S. C.

William M. O'Connor, 58, vice president of Atlantic Refining Co. and general manager of its foreign production, died January 16 aboard a Pan American World Airways plane en route to La Guayra, Venezuela, from Camaguey, Cuba.

Samuel Walter Gregg, Sr., 65, director of South Penn Oil Co., manager of Hilltop Oil Co., secretary-treasurer of Northern Oil Co., and secretary-treasurer and general manager of Bovaird & Seyfang Manufacturing Co., died January 18 in Bradford, Pa.

R. E. Powell, 59, retired assistant general manager of refining in the Houston office of Humble Oil & Refining Co., died January 16 in San Antonio.

ANNUAL



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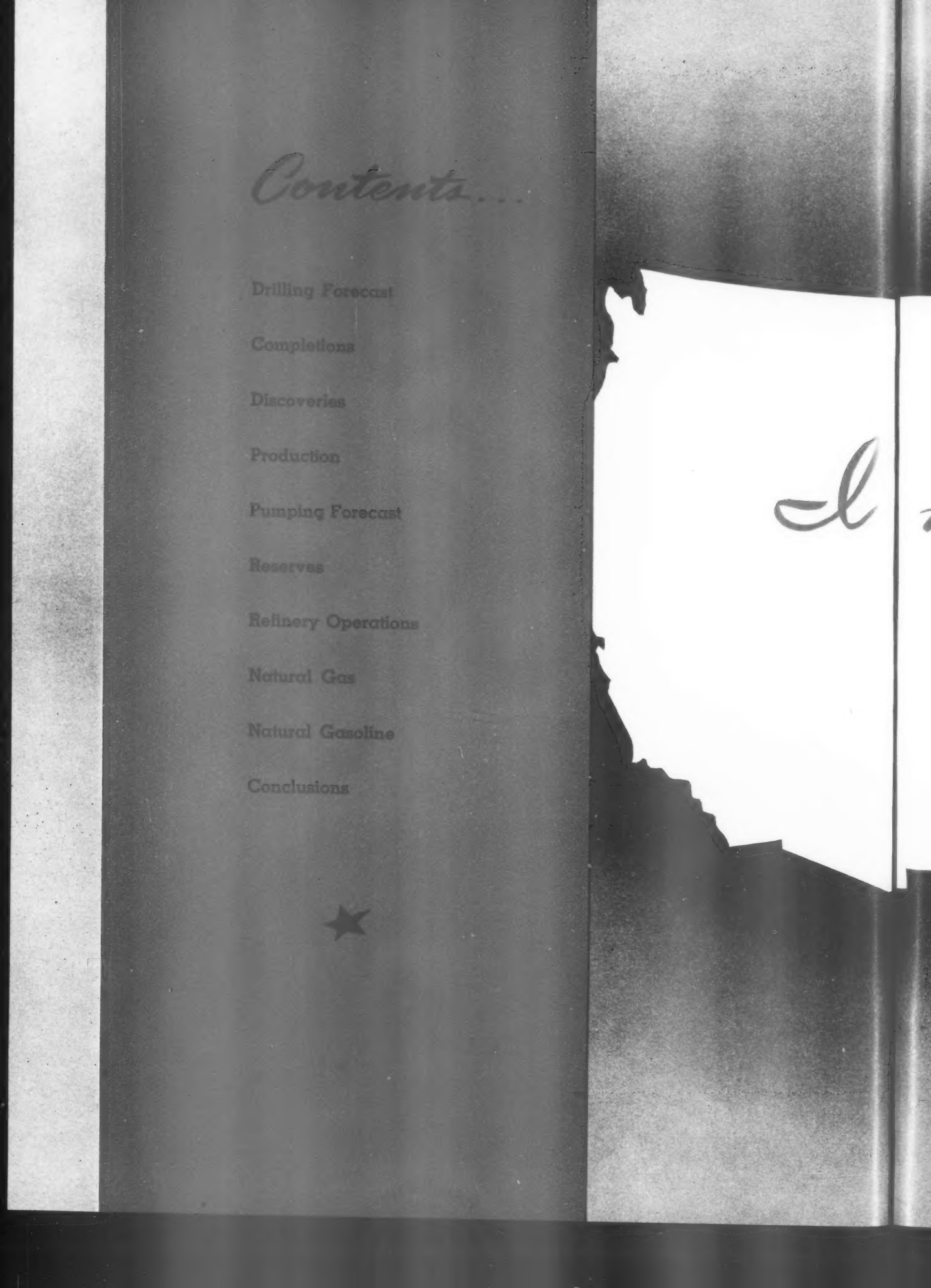
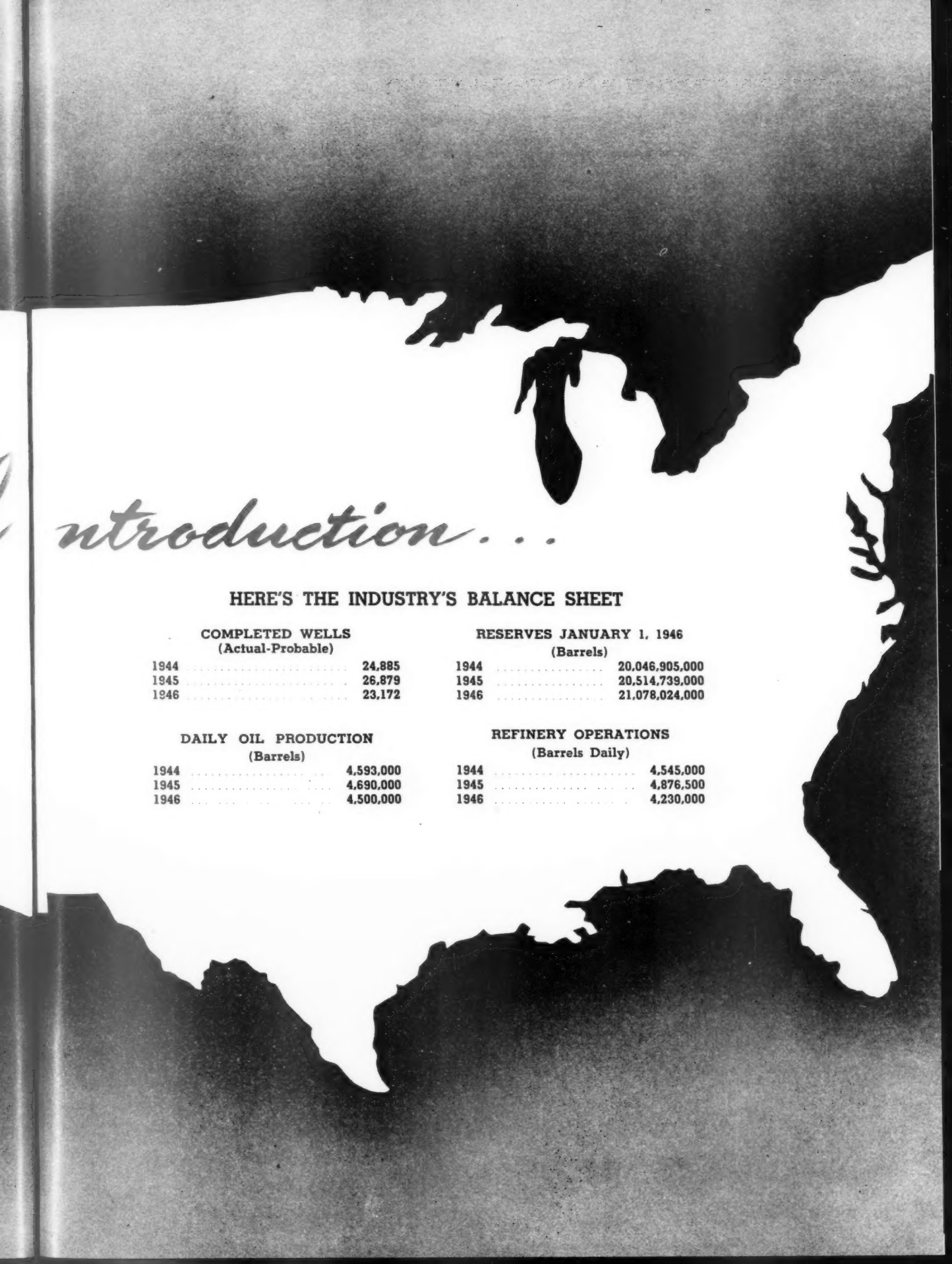
Natural Gasoline

Conclusions





ntroduction . . .

HERE'S THE INDUSTRY'S BALANCE SHEET

COMPLETED WELLS
(Actual-Probable)

1944	24,885
1945	26,879
1946	23,172

RESERVES JANUARY 1, 1946
(Barrels)

1944	20,046,905,000
1945	20,514,739,000
1946	21,078,024,000

DAILY OIL PRODUCTION
(Barrels)

1944	4,593,000
1945	4,690,000
1946	4,500,000

REFINERY OPERATIONS
(Barrels Daily)

1944	4,545,000
1945	4,876,500
1946	4,230,000

Operators Expect to Drill More Than 23,000 Wells in 1946

	Twelve months, 1945				Projected operations, twelve months, 1946				Footage	
	Total wells completed		No. of field wells	No. of wildcat wells	Total wells programed		No. of field wells	No. of wildcat wells	Twelve months, 1945	Twelve months, 1946 (programed)
	Rotary	Cable			Rotary	Cable				
Alabama	37	.....	15	22	59	.....	30	29	152,949	243,847
Arizona	0	.....	0	0	3	.....	0	3	0	15,000
Arkansas	180	5	141	44	166	.....	138	28	828,286	752,136
California	2,150	.....	1,915	235	1,665	.....	1,432	233	8,670,797	6,714,945
Colorado	60	.....	42	18	83	.....	70	13	352,396	487,459
Florida	15	.....	2	13	60	.....	10	50	93,917	373,260
Georgia	5	.....	0	5	8	.....	0	8	14,938	20,000
Illinois	1,744	5	1,299	450	1,605	.....	1,210	395	4,565,482	4,189,050
Indiana	258	45	211	94	351	62	338	75	499,620	676,494
Iowa	1	.....	0	1	3	.....	0	3	2,000	6,000
Kansas	1,311	485	1,411	385	1,162	561	1,247	476	5,877,301	5,637,656
Kentucky	531	206	632	105	447	257	525	179	1,275,167	1,217,920
Louisiana	1,108	.....	941	167	983	.....	750	233	7,774,467	7,046,451
North	493	.....	400	93	407	.....	350	57	2,116,674	1,747,251
South	615	.....	541	74	576	.....	400	176	5,657,793	5,299,200
Michigan	508	262	481	289	466	210	412	264	1,962,825	1,723,124
Mississippi	362	.....	238	124	403	.....	251	152	2,403,006	2,675,114
Missouri	18	.....	9	9	20	.....	10	10	19,887	25,000
Montana	244	68	277	35	222	141	318	45	753,952	877,371
Nebraska	13	.....	3	10	15	.....	5	10	46,799	50,000
New Mexico	326	98	348	76	406	94	426	74	1,508,217	1,778,500
New York	0	1,423	1,423	0	0	1,128	1,128	0	2,053,387	1,626,576
Ohio	0	1,014	932	82	0	829	706	123	2,688,731	2,198,508
Oklahoma	2,244	277	2,050	471	1,368	321	1,263	426	10,047,648	6,732,354
Pennsylvania	0	3,642	3,642	0	0	2,442	2,442	0	6,169,475	10,000,000
Tennessee	1	0	0	1	3	.....	0	3	3,707	10,000
Texas	6,701	494	5,643	1,552	6,096	793	5,326	1,563	32,494,828	30,070,401
East Texas	401	.....	297	104	586	.....	514	72	2,504,330	3,659,570
North Texas	1,764	21	1,389	396	1,870	386	1,501	755	4,565,382	5,770,848
South Texas	412	.....	304	108	288	.....	186	102	1,611,195	1,126,368
Lower Gulf Coast	899	.....	712	187	826	.....	684	142	5,890,708	5,412,778
Southwest Texas	141	2	60	83	122	.....	94	28	642,881	548,512
Upper Gulf Coast	822	.....	595	227	648	.....	472	176	5,799,083	4,571,640
Panhandle	510	21	524	7	387	22	382	27	1,685,858	1,298,575
West Texas	1,479	261	1,437	303	1,135	193	1,145	183	8,496,573	6,484,624
W. Cent. Texas	273	189	325	137	234	192	348	78	1,298,818	1,197,486
West Virginia	0	806	806	0	0	485	485	0	2,002,234	427,285
Wyoming	219	8	162	65	234	5	208	31	967,192	1,018,379
Others	3	0	0	3	14	0	0	14	12,240	60,100
Total	18,037	8,842	22,623	4,256	15,844	7,328	18,730	4,442	93,240,848	86,652,930

DEVELOPMENT COMPLETIONS BY STATES

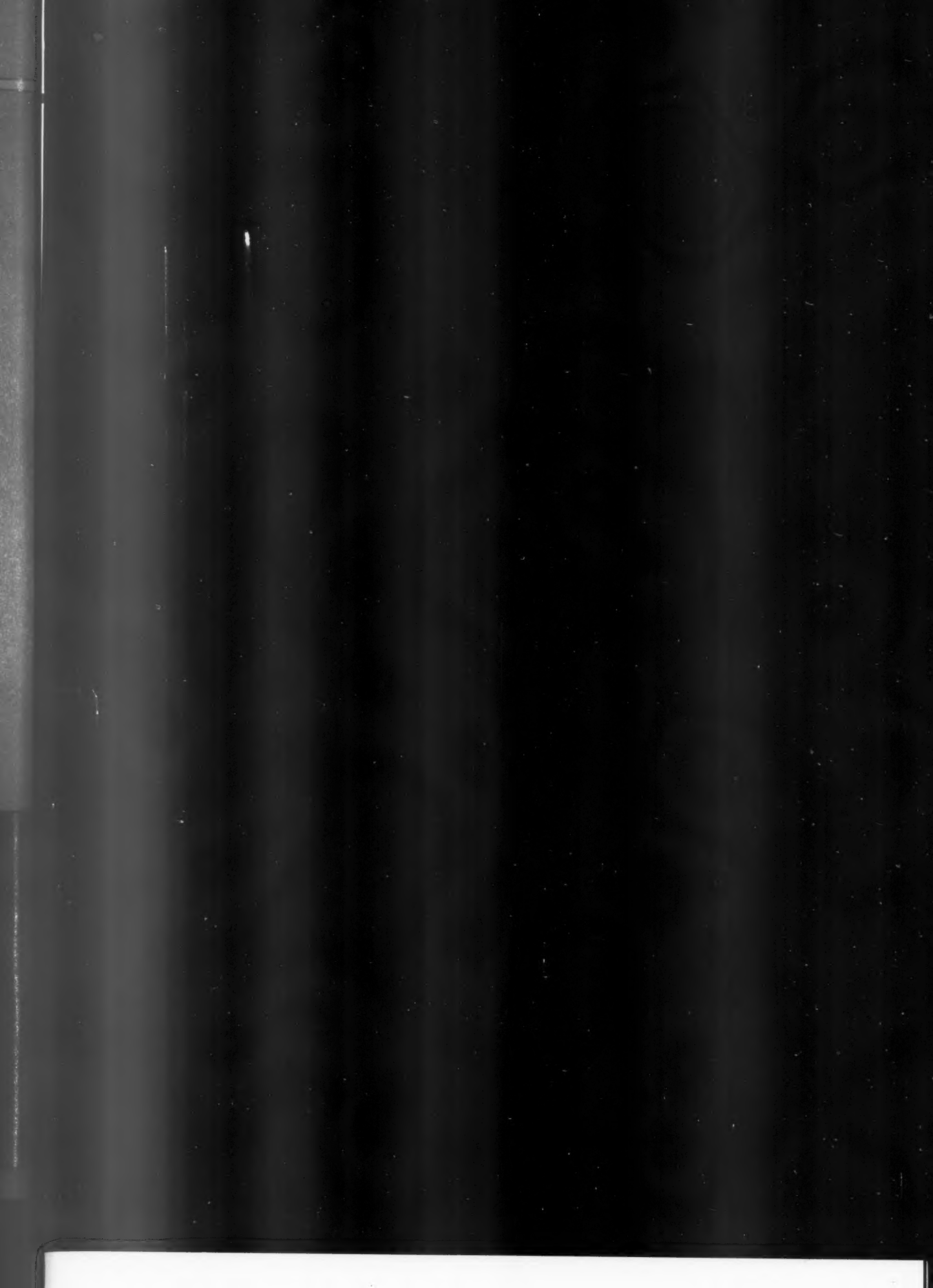
State—	Comp.	Oil	Gas	Dry*
New York	1,423	714	0	709
Pennsylvania	3,642	1,788	322	1,532
West Virginia	806	92	577	137
Ohio	932	226	389	317
Indiana	211	104	24	83
Kentucky	632	365	107	160
Michigan	481	243	46	192
Illinois	1,299	994	1	304
Mississippi	238	192	0	46
Alabama	15	12	0	3
Florida	2	1	0	1
Kansas	1,411	802	185	424
Neb.-Mo.-Iowa	12	1	4	7
Oklahoma	2,050	1,340	230	480
Texas total	5,643	3,808	670	1,165
North	1,389	887	12	490
West Central	325	182	40	103
West	1,437	1,252	26	59
Eastern	297	143	114	40
Panhandle	524	176	325	23
Upper Gulf	595	388	46	161
Lower Gulf	712	549	75	88
South	304	190	30	84
S. Central	60	41	2	17
Louisiana total	941	613	101	227
Northern	400	230	82	88
Southern	541	383	19	139
Arkansas	141	113	0	28
Montana	277	207	38	32
Wyoming	162	144	9	9
Colorado	42	41	0	1
New Mexico	348	269	15	64
California	1,915	1,680	54	181
Total	22,623	13,749	2,772	6,102

*Includes 2,212 service wells.

WILDCAT COMPLETIONS BY STATES

State—	Comp.	Oil	Gas	Dry
Ohio	82	0	15	67
Indiana	94	7	4	83
W. Kentucky	105	17	1	87
Michigan	289	17	8	264
Illinois	450	66	0	384
Mississippi	124	6	0	118
Alabama	22	1	1	20
Georgia-Florida	18	0	0	18
Kansas	385	36	16	333
Neb.-Mo.-Iowa	20	0	0	20
Oklahoma	471	86	20	365
Texas total	1,552	228	44	1,280
North	396	54	1	341
West Central	137	18	4	115
West	303	57	0	246
Eastern	104	14	1	89
Panhandle	7	0	0	7
Upper Gulf	227	49	10	168
Lower Gulf	187	27	19	141
South	108	8	6	94
S. Central	83	1	3	79
Louisiana total	167	33	7	127
Northern	93	9	7	77
Southern	74	24	0	50
Arkansas	44	2	0	42
Montana	35	10	0	25
Wyoming	65	18	1	46
Colorado	18	1	1	16
New Mexico	76	10	6	60
California	235	10	2	223
Miscellaneous*	4	0	1	3
Total	4,256	548	127	3,581

*North Carolina, South Dakota, Tennessee, Utah.



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Drilling and Completions

THE drilling program for the petroleum industry in 1946 calls for 23,172 wells to be completed, a drop of 13.8 per cent from the actual number of wells completed in 1945. The change in the tax picture and the scarcity of attractive prospects will account for most of the drop, but it is significant that the projected number of wildcats exceeds the number drilled in 1945, and proven areas will absorb the decrease. Operators will be looking for new reserves to replace the abnormal production during the war years and are planning approximately 200 more wildcat tries.

The actual number of completions in 1945 closely parallels the forecast made in January of 1945 by the Journal's independent survey. Wells completed totaled 26,879, which is just 5.4 per cent under the projection. Wells in proven areas were 5 per cent under expectations, and wildcat tries were 7.2 per cent less than the forecast. Difficulty in getting materials for drilling and the tight manpower situation accounted for the actual number being less than the projected program.

Completions in Texas numbered 7,195 in 1945, an increase of 1,601 over the anticipated drilling program. This increase was largely in North and West Central Texas, Lower Gulf Coast of Texas, and West Texas. Eastern Texas did not have as many wells completed as was expected. New Mexico and West Virginia dropped below the projected figures, but most states either approximated the forecast or slightly exceeded it.

Older oil-producing areas in the United States are planning a decrease in drilling for 1946, but the newer areas are planning increases. For instance, operators in Mississippi, Alabama, Colorado, and Wyoming plan to drill more wells in 1946 than in 1945, both to develop recently discovered fields and to hunt new ones. Mississippi drillers plan to drill 403 wells, as opposed to the 362 completions in 1945. The development of existing fields will absorb 251 of these, and the remaining 152 will be wildcats, looking for new field reserves. Alabama plans 30 field wells and 29 wildcat tries for a total of 59 wells, 22 more than in 1945. The Rocky Mountain area is holding the interest of oil operators, and drilling activity is expected to increase in Colorado and Wyoming. Nearly twice as many field wells are planned for Colorado, and about the same number of wildcats. Extension of the Rangely field has opened new areas for operators, and interest is running high. In Wyoming, more wells are programmed for 1946 with the emphasis on field development.

The Mid-Continent area, including Kansas, Oklahoma, Arkansas, and North Louisiana, is planning 20 per cent fewer wells in 1946 than were completed in 1945. Most of this reduction will take place in field development, but wildcat wells will be fewer too. The Illinois basin, including Indiana and Kentucky, will almost hold steady during the year, with a program of only 2.5 per cent less than the actual figures for 1945. Indiana operators plan about 30 per cent more wells than last year, and the other two states will drop about that amount.

The eastern area will have a 29 per cent drop in completions during the year, according to the survey. West Virginia will have its drilling program cut almost in half, Pennsylvania will drop 33 per cent, Ohio will have 18 per cent fewer completions, and New York's drilling forecast calls for a 21 per cent reduction.

Oklahoma is expected to take the largest drop proportionately in drilling operations. Completions for 1945 totaled 2,521, but only 1,689 wells are planned for 1946. California is planning fewer wells, and completions in Illinois are expected to drop slightly. Texas operators will hold firm in most areas, with increases expected in North and East Texas, and slight drops in activity in the other areas of the state. Completions in East Texas totaled 401 in 1945, and the forecast for 1946 calls for 586 wells, 514 of which will be field development wells. North Texas, which completed more wells in 1945 than called for in the forecast for that year, is again expected to increase, with the forecast calling for 471 more wells in 1946 than in the past year.

With the manpower situation easing, the drilling program may take a sharp upswing as soon as equipment is available. Materials needed for drilling are still short, but when materials production increases, the drilling program will probably expand.

COMPARISON OF DRILLING RESULTS, 1945 VS. 1944

	Total completions		Per cent	Oil well completions		Per cent	Gas well completions		Per cent	Dry hole completions*		Per cent
	1945	1944	change	1945	1944	change	1945	1944	change	1945	1944	change
Texas	7,195	5,729	+25.6	4,036	3,526	+14.5	714	268	+166.4	2,445	1,935	+26.4
California	2,150	2,034	+5.7	1,690	1,663	+1.6	56	48	+16.7	404	323	+25.1
Louisiana	1,108	803	+38.0	646	429	+50.6	108	82	+31.7	354	292	+21.2
Oklahoma	2,521	1,890	+33.4	1,426	1,031	+38.3	250	212	+17.9	845	647	+30.6
Kansas	1,796	1,837	—2.2	838	824	+1.7	201	93	+116.1	757	920	—17.7
Illinois	1,749	1,949	—10.3	1,060	1,196	—11.4	1	6	—83.3	688	747	—7.9
New Mexico	424	414	+2.4	279	283	—1.4	21	15	+40.0	124	116	+6.9
Wyoming	227	205	+10.7	162	167	—3.0	10	5	+100.0	55	33	+66.7
Arkansas	185	215	—13.9	115	128	—10.2	0	2	—100.0	70	85	—17.6
Nine-state subtotal	17,355	15,076	+15.1	10,252	9,247	+10.9	1,361	731	+86.2	5,742	5,098	+12.6
Eastern (incl. Ohio)	6,885	7,566	—9.0	2,820	2,681	+5.2	1,303	1,882	—30.8	2,762	3,003	—8.0
All other states	2,639	2,620	+0.7	1,225	1,101	+11.3	235	454	—48.2	1,179	1,065	+10.7
Total United States	26,879	25,262	+6.4	14,297	13,029	+9.7	2,899	3,067	—5.5	9,683	9,166	+5.6

*Includes service wells.

Drilling and Completions

CONSIDERING wartime handicaps, 1945 represented the greatest achievement in drilling that the industry has ever recorded. The total footage drilled was 93,243,000 ft., a record exceeded only by 1941's total of 98,509,000 ft. The average depth of the wells completed was the greatest in history, the 3,469-ft. average jumping 7.3 per cent from 1944.

The total number of wells completed, 26,879 (including service wells) has been exceeded several times in the past, but the combination of number of wells times average footage, represents the real achievement. In comparing the total number of wells drilled, it is interesting to note that oil producers increased 9.6 per cent, gas wells decreased 5.4 per cent, and dry holes increased 5.6 per cent, to make a total increase of all completions of 6.4 per cent compared with 1944.

This means that the industry, concentrating on the task of getting more oil for the war, improved its performance in 1945 in completing more oil wells, fewer gas wells, and held the dry-hole percentage a little lower than in the previous year. This was true both of wildcats and development wells. Although wildcat wells increased nearly 12 per cent over 1944 to establish a new all-time record, the percentage of successes increased. Last year 15.9 per cent of all wildcat tests found oil or gas, compared to 14.6 per cent in the previous year. Among the development wells the same general results occurred, 73 per cent of such wells finding either oil or gas, compared with 71.3 per cent the year before.

With the possible exception of total number of wildcats completed, the 1945 records could have been slightly higher if the war had not ended. In general the year was one in which the industry kept straining and pushing to increase drilling activity, with each advance coming harder and harder as new peaks were established, until V-J Day. After victory, there was a letdown in that there was no more struggle to push the level of activity higher in spite of all obstacles. With the pressure eased, there was a slight letdown from the peak levels and the industry coasted the rest of the year, still at a very high level, but a little below the peak. If the war had continued, the industry would have come very close to the wartime goal of 27,500 wells (exclusive of service wells), including 4,500 wildcats.

Texas Wells Increase 1,466

The geographic distribution of the changes in 1945 drilling programs was marked by a decrease of about 672 wells in the Appalachian states, as transportation improved, easing the demands indigenous to that area. Texas, as might have been expected, led the nation in gains, showing an increase of 1,466 wells, followed by Oklahoma with an increase of 631 and Louisiana with 305 more than the previous year. The scattered gains and losses of the remaining states just about balanced with 1944 records.

While the story of the total effort for the year for the entire country is always a matter of interest, drilling and completing wells is usually a local, or regional matter in which the problems involved, the depths drilled, and the general activity in one area are often quite different from those in other areas. The war has upset so many normal standards that it is difficult to determine what the new normal should be in estimating conversion problems.

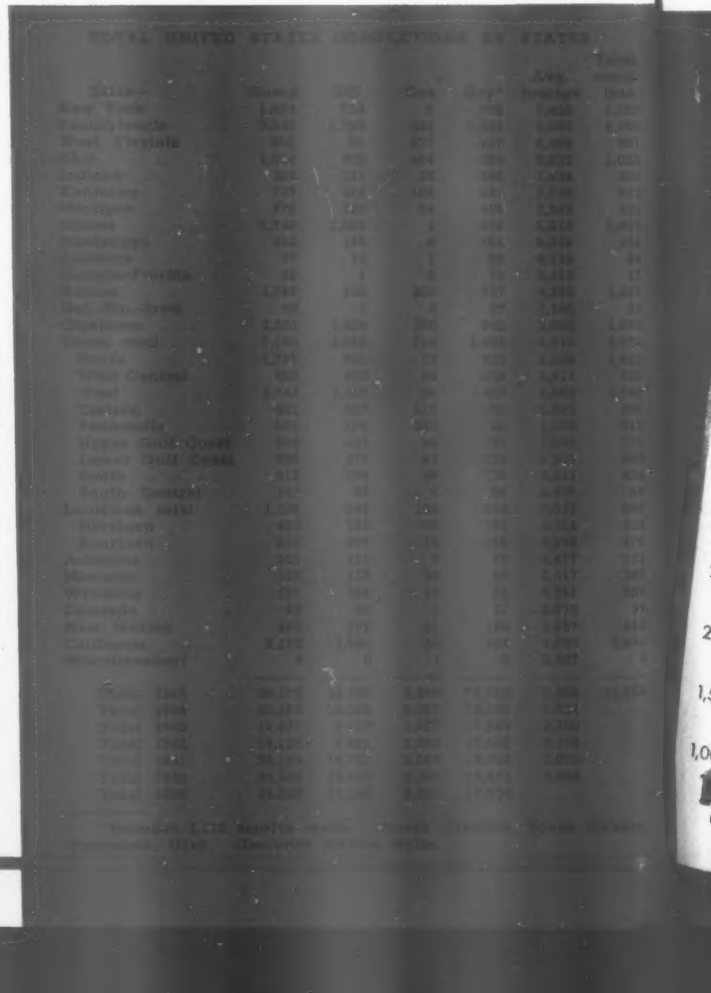
To provide all the people interested in those problems, executives, operators, drilling contractors, suppliers, and others, with material on which to base conclusions about their own problems, The Oil and Gas Journal in this issue is presenting a series of regional charts. The purpose of these charts is to supply in visual form, for quick appraisal, three salient points of interest.

These points are total number of wells drilled, total footage, and average footage. The charts are arranged to give some idea of the relative importance of various states or districts within a state, and to show what impact the war had on trends.

Fig. 1 shows that considering the main oil producing states, the peak of drilling operations both in number and total footage was reached in 1937, followed by a slump in 1938 and a steady rise to 1941. The impact of the war and the loss of transportation facilities is shown in the steep drop in 1942 and the continued low level of 1943. The increases in 1944 and 1945 have not quite brought the footage drilled back to the 1941 level. But with total completions still far below 1941, a steep increase in average depth must have taken place. This is verified by the third line on the chart, which shows that the shallower wells were the ones most affected by the war, since average depth both in 1942 and 1943 was higher than 1941.

This raises the question of whether the return to peacetime conditions will result in some check to the steadily increasing trend of average depth. No one expects the long-term trend to be changed, but the question is whether or not the war is responsible for a short-term acceleration of the trend toward deeper wells.

Fig. 2 deals only with Texas, by far the most important state to the industry. It reveals the same trend



of peaks in completions and footage in 1937, followed by a slump, recovery through 1941, then hard hit by the war. Here too it is noticeable that the average footage jumped considerably when the war curtailed the number of wells, but in 1945 the average depth declined slightly.

Fig. 3 deals with total completions in the various districts of Texas. It is noticeable that from the standpoint of the number of wells drilled, the Gulf Coast, the Permian basin of West Texas-Southeast New Mexico, and North Central Texas fall into a family group, generally following the same trends. On the other hand, South Central Texas, Eastern Texas and the Panhandle seem to make up another group.

Footage Totals for Areas

Fig. 4 puts the various districts in Texas in proper perspective as far as their proportion of the total footage drilled is concerned. Here it is obvious that the Gulf Coast and the Permian basin area account for a very large proportion of the total footage, with North Texas occupying a sort of intermediate position, while Eastern, Southern, and Panhandle fall into a minor group.

Fig. 5 throws some new light on the trends toward

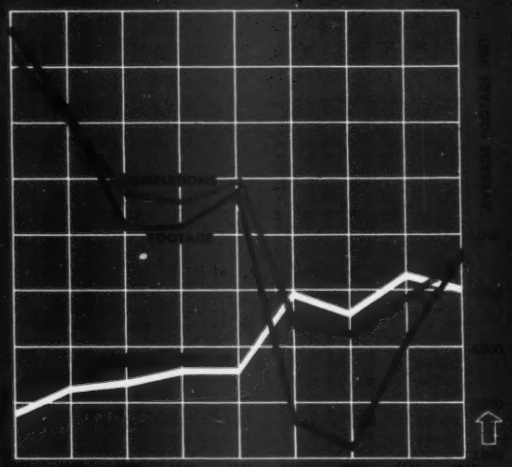


Fig. 2—Texas: Total completions, total footage drilled, average footage per well

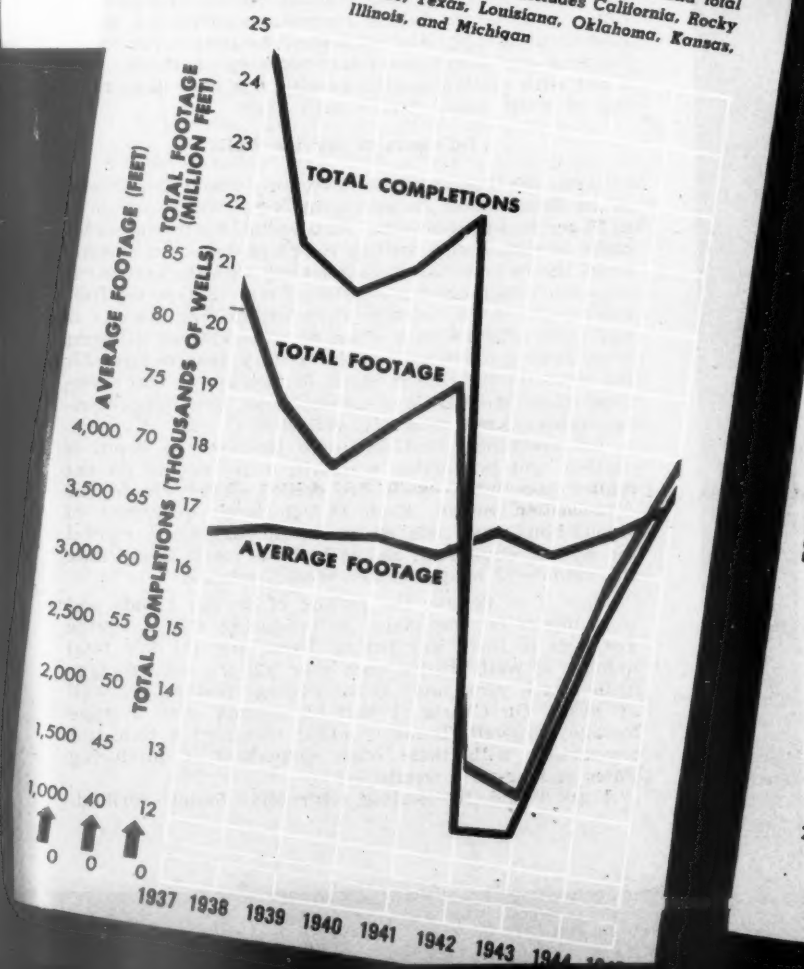


Fig. 1—Combined total footage, average footage per well, and total completions in major oil producing states. Includes California, Rocky Mountain states, New Mexico, Texas, Louisiana, Oklahoma, Kansas, Illinois, and Michigan

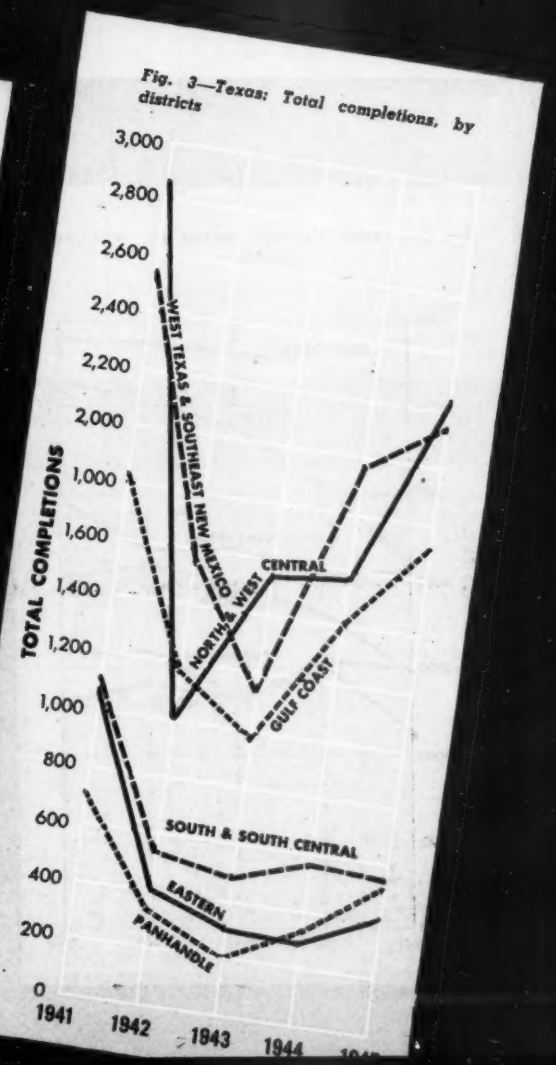


Fig. 3—Texas: Total completions, by districts

Fig. 4—Texas: Total footage drilled, by districts

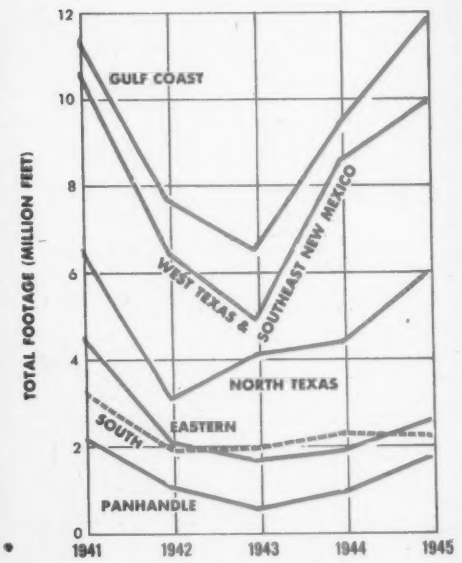
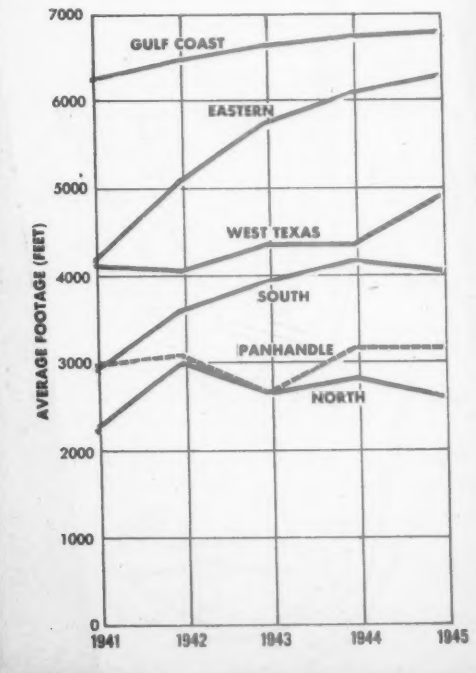


Fig. 5 — Texas: Average footage per well, by districts



Drilling and C

deeper drilling in the various parts of Texas, instead of just considering the state as a whole. Thus the trend in the Gulf Coast is a slow but steady increase from average depths that have exceeded the other areas by a substantial margin for several years. In Eastern Texas, the trend is sharply upward, but from Fig. 4 it is obvious that this is for fewer wells.

West Texas probably indicates the trend toward deeper drilling in the Permian lime section, with the big jump in 1945 reflecting the increasing activity in developing Ellenburger, Devonian, and other pre-Permian formations. South Texas, like Eastern, represents fewer wells, but with the upward trend temporarily halted in 1945. Panhandle and North Texas indicate no definite trend toward deeper drilling on an average, despite occasional deeper tests than usual in those areas.

This chart would indicate that from the standpoint both of number of wells drilled and increased depth, the trend is most important in the Gulf Coast and West Texas, and that such activity in these two areas will probably continue. In totals for the entire state, the importance of the trends in these two regions will be partly masked, and the significance of these trends for other areas will seem greater than actual.

Fig. 6 illustrates one of those curious statistical quirks that makes totals for the United States misleading at times, in so far as drilling records are concerned. In the Eastern area of the United States, the practice of waterflooding and other secondary-recovery methods, combined with shallow depths, results in a very large number of wells being drilled each year.

Influence of Service Wells

Although the area produced only about 2 per cent of the country's oil, its well completions will run from 20 to 30 per cent of the United States total. Furthermore, because of nature of a drilling campaign based on a water flood, the rise and fall of completions with fluctuations in economic conditions has a different type of time lag from other parts of the country. Therefore drilling activity in this area, affected as it often is by conditions differing from those in other parts of the country, tend to scramble the totals for the United States in such a way that sometimes the current drilling trends in the large oil-producing states are not accurately reflected.

On the other hand, although the average depth is shallow and production is small, many people do not realize how many wells are drilled each year in the Appalachian region. Even though large quantities of second-hand materials are used, the aggregate market for drilling equipment and material is much larger than the volume of oil production would indicate.

Figs. 7 to 12 give the picture of prewar trends and war impact on the major oil-producing states outside Texas as to three key points. These are: (1) The total number of wells drilled each year; (2) the total footage drilled each year; and (3) the average footage per well by years. On Charts 11 and 12, dealing with average footage per well, Texas is added to afford a basis for comparison with these other important oil-producing states in long-term trends.

Figs. 9 and 10, dealing with total footage drilled,

Completions . . .

show that California, Louisiana, and Oklahoma have made relatively the strongest comebacks from the low points of 1942 and 1943, when the war shortage of materials affected most of the country's drilling. California suffered only in 1942, and started back up sharply in 1943 on a trend that has continued through 1945, bringing total footage drilled to levels considerably above the 1937-41 prewar period.

Illinois figures on total footage indicate that 1941 and the end of the drilling boom in that state coincided, and that total footage drilled in 1944 and 1945 stayed below the 1942 level, which was the low period for the country as a whole. Michigan showed a slight upturn in 1945, but for the most part it has been on a steady downward trend since 1937.

Figs. 11 and 12 show the trend in average depth of wells drilled in six important oil-producing states, where a marked trend toward deeper drilling is evident. In Fig. 11, it is obvious that war conditions in California brought about a temporary sharp reversal of prewar conditions, emphasizing drilling in shallower fields. Beginning in 1944 the trend again started sharply toward deeper drilling but the number of shallow wells drilled held the over-all average far below prewar figures. In New Mexico just the opposite trend was apparent, deeper drilling stepping up with the coming of war, arresting a prewar trend toward shallower wells. In the other four states, Oklahoma, Texas, Louisiana, and Wyoming, a steady prewar trend toward deeper drilling was, if anything, accelerated by war conditions.

Where the 1945 Drilling Was Concentrated

California.—More than half of the total development work during 1945 was concentrated in 11 fields; about one-third of the total actually being concentrated in four fields. Elk Hills, owing to a concentrated drilling program in the Naval Reserve to supply oil for the Pacific war, led all fields with 223 completions, of which 2 were gas wells, 8 dry holes, and the remainder producers.

Buena Vista Hills and Wilmington ran nearly neck and neck, with 151 and 148 completions respectively, with Wilmington having the unusual record of every completon, resulting in an oil well. Buena Vista Hills, had 1 gas well and 10 dry holes out of its 151 completions. South Belridge was the only other field to register over 100 completions, with 111 oil wells and 2 dry holes, for a total of 113.

In the second group of 7 fields, completions ranged between 50 and 81 per field, for a group total of 419. Santa Maria Valley led the second group, with 77 oil wells and 4 dry holes; followed by Midway-Sunset with 51 oil wells, 1 gas well, and 9 dry holes. Newport-Costa Mesa tied with Midway-Sunset in totals, but had 12 dry holes to 49 oil wells completed. East Coalinga had an excellent record, 57 oil wells and 2 dry holes, whereas Kern Front, next in totals, had 11 dry holes to 44 oil wells. Huntington Beach had 46 oil wells, 1 gas well, and 5 dry holes. Ventura Avenue, smallest of the 11 leading fields in total completions, had a perfect score, 50 oil wells out of 50 completions.

Colorado.—Here the story was simple, the Rangely field accounting for nearly three-fourths of all the devel-

Fig. 6—Eastern Area: Total completions; total footage drilled, and average footage per well

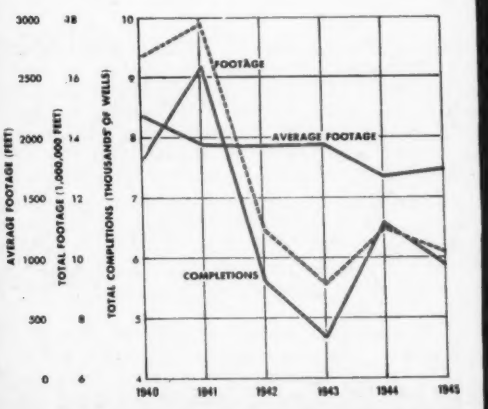


Fig. 7—Total completions by states, including California, Kansas, Louisiana, and New Mexico

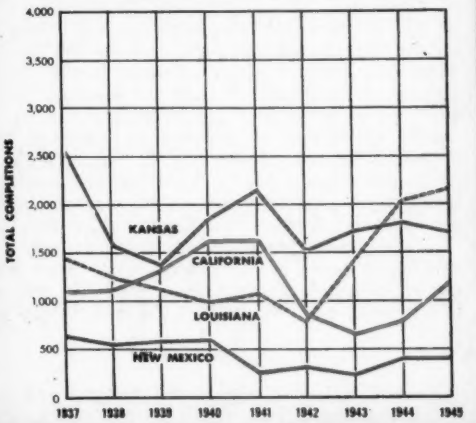
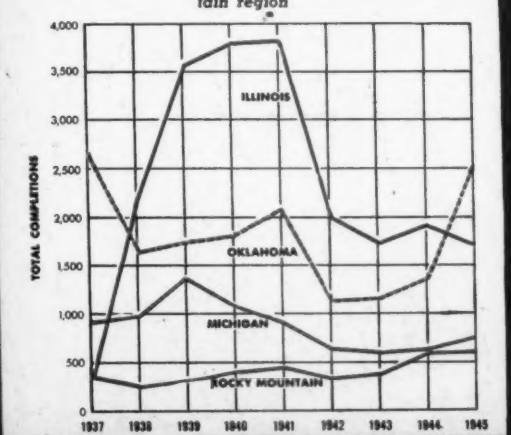


Fig. 8—Total completions by states, including Oklahoma, Illinois, Michigan, and Rocky Mountain region



opment drilling, and recording 29 oil wells and 1 dry hole.

Wyoming.—Five fields accounted for a little over half the total development drilling, Elk Basin with 35 oil wells to 2 dry holes leading, followed by Oregon Basin with 13 completions, all oil wells; Garland, and Lance Creek with 12 each, all oil producers, and the old Salt Creek field taking fifth place with 10 completions, all oil wells.

Montana.—Two fields, Cut Bank and Kevin-Sunburst, accounted for about three-fourths of all the development drilling in 1945. Cut Bank had 92 oil wells, 8 gas wells, and 9 dry holes for a total of 109. Kevin-Sunburst completed 84 oil wells, 2 gas wells, and 20 dry holes, for a total of 106.

Kansas.—As usual, drilling in Kansas was widely scattered, but four areas did account for about one-fourth of the total. The Hugoton gas field was outstanding, with 163 gas wells and 1 dry hole for a total of 164 completions. Among the oil fields, Kraft-Prusa had 67 oil wells and 28 dry holes for a 95 total. The Trapp field had 48 oil wells and 16 dry holes, for a second place total among oil fields with 64. The Virgil area with 45 oil wells and 8 dry holes was the only other Kansas pool to register 50 or more completions.

Five Fields Dominate

Oklahoma.—Five pools accounted for about one-third of all Oklahoma development drilling. West Edmond, of course, dominated the picture with 390 oil wells, 1 gas well, and 12 dry holes, for a total of 403. The Oklahoma portion of the Hugoton gas field was next with 110 completions, all successful gas producers. In the East Pauls Valley field, the 63 completions included 53 oil wells, 3 gas wells, and 7 dry holes. The Velma district of Stephens County had 57 completions, including 45 oil wells, 4 gas, and 8 dry holes. The Cement field accounted for 51 completions, 37 oil, 6 gas, and 8 dry.

Aside from these, there was a surprising amount of drilling in some of the older areas. Miscellaneous drilling in Seminole County accounted for 103 completions, of which 62 were oil wells, 5 gas, and 36 dry holes. Osage County had 92 completions, 58 oil wells, 1 gas, and 33 dry holes, and Creek County accounted for 33 oil wells, 1 gas, and 17 dry holes for a total of 51.

Texas Panhandle.—Gray, Hansford, Hutchinson, and Moore counties accounted for over three-fourths of the drilling. Gas development in Moore resulted in 123 gas wells, 2 oil wells, and 1 dry hole. Gray County, with 73 oil wells, 24 gas, and 7 dry holes, had a total of 104 to take second place. Hutchinson County was third with 75 oil wells, 13 gas, and only 1 dry hole. Hansford County's efforts were devoted to gas, with 67 gas wells and 4 dry holes making up a total of 71.

Electra and K.M.A. Active

North Texas.—A rather large volume of drilling was scattered over many pools, however about one-third was concentrated in six pools. Electra had 131 completions, 85 oil and 46 dry, followed by K.M.A. with 66 oil and 21 dry holes for a total of 87. Ellis accounted for 71 completions, 48 oil and 23 dry; Thornberry had 49 oil and 13 dry for a total of 62. Hildreth had an excellent record with 39 oil to only 6 dry out of a 45 total, and Holliday had 36 oil and 12 dry out of 48.

West Texas.—Seven areas accounted for nearly half of the total development in 1945. Fullerton led with 214 completions, 208 oil and only 6 dry holes. Slaughter followed with 178, consisting of 165 oil, 1 gas, and 12 dry holes. Keystone's multipays accounted for 91, of which 87 were oil producers, 1 gas, and 3 dry holes. The Sand Hills area and Ward North Estes had 51 completions each, 45 oil, 1 gas, and 5 dry for Sand Hills; 47 oil and 4 dry for Ward North Estes. The Howard-Glasscock area completed 34 oil and 13 dry, for a 47 total. TXL, between Devonian and Ellenburger, completed 42 wells, of which only 1 was dry.

Gulf Coast.—About one-third of the drilling activity was concentrated in seven fields, the rest being widely scattered. Seeligson, now recognized as one of the really big major fields, accounted for 111 completions, of which

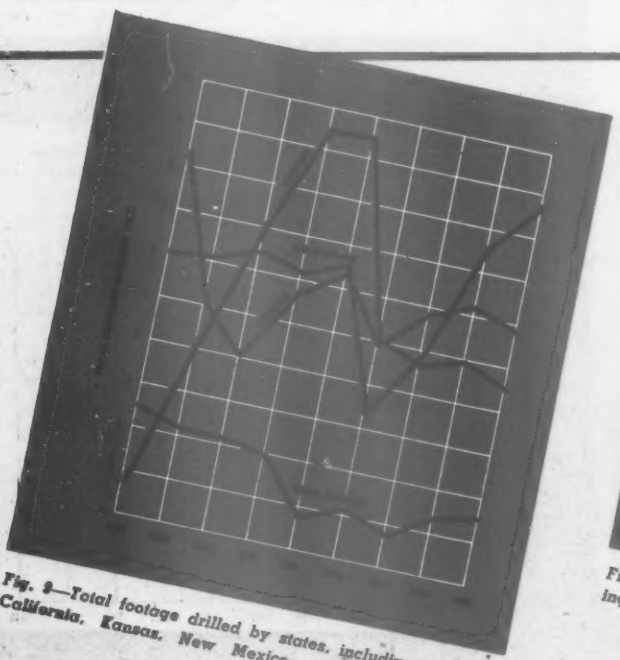


Fig. 9—Total footage drilled by states, including California, Kansas, New Mexico, and Illinois

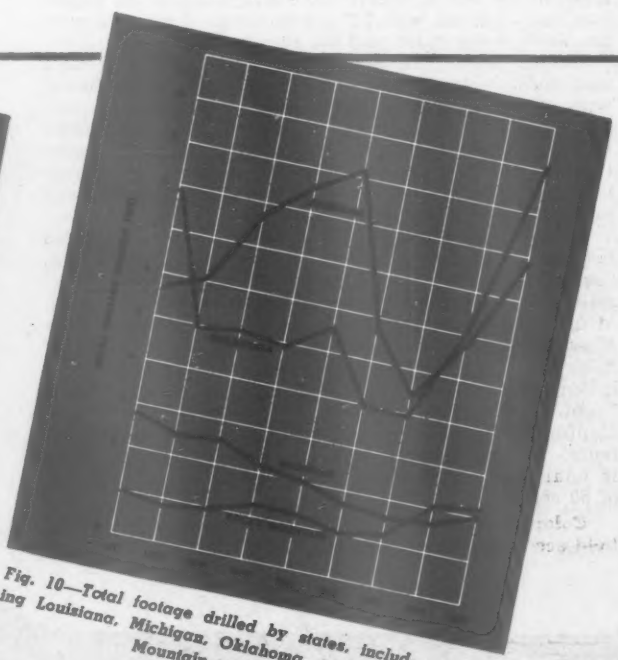


Fig. 10—Total footage drilled by states, including Louisiana, Michigan, Oklahoma, and Rocky Mountain region

3 were gas, 2 dry, and 106 oil producers. Willamar ranked second, with 69 oil, 2 gas, and 7 dry for a 78 total. Stratton had 42 oil, 1 gas, and 2 dry for a 45 total, and third place, followed by Agua Dulce with 43 completions, including 25 oil, 10 gas, and 8 dry. Tijerina ranked fifth, with 40 completions, all oil wells. Livingston had 38 completions, 35 oil and 3 dry, and Fannett, in seventh place, registered 22 oil, 4 gas, and 6 dry for a total of 32.

Development Drilling Concentrated

South Texas.—About one-third of the drilling was concentrated in three fields, Garcia leading with 55 completions, 37 oil, 7 gas, and 12 dry. North Rincon followed with 15 oil, 3 gas, and 2 dry for a total of 20, followed closely by Ross with 18 total, including 10 oil, 1 gas, and 7 dry.

East Texas.—Over half of the development work was concentrated in three fields, Carthage gas development resulting in 95 completions, 2 oil, 91 gas, and 2 dry. Hawkins took second place with 40 oil wells out of 40 completions, while New Hope with 16 oil wells and 4 dry holes for a total of 20, was third.

South Louisiana.—Drilling was widely scattered, but about one-third of the completions were in seven fields. Delta Farms led with 23 oil, and 2 dry for a total of 25, followed closely by Erath with 24 oil out of 24 completions. Egan had 20 oil and 2 dry for a total of 22. West Tepetate duplicated Egan's record exactly. Good Hope had 18 completions, 16 oil and 2 dry; Bayou Sale had 14 oil producers out of 14 completions, while Vinton had 10 oil and 4 dry in its total of 14.

North Louisiana.—Nearly three-fourths of the development drilling was concentrated in six areas. The Delhi-Big Creek area led with 110 completions, 82 oil, 2 gas, and 26 dry. The old Bellvue shallow development brought 36 oil and 9 dry completions for a 45 total. Monroe gas field drilling accounted for 43 completions, all gas wells. Lake St. John drilling resulted in 29 oil, 1 gas, and 3 dry, and Holly Ridge had 16 oil, 6 gas, and 1 dry hole completed. The De Soto-Red River development totaled 26, 10 oil, 3 gas, and 13 dry.

Arkansas.—Over half of the development drilling was in three fields, with one, Stephens, accounting for the lion's share. The field had 60 completions, 53 oil and 7 dry. Fouke with 15 completions was second, 10 oil and 5 dry, followed by Atlanta with 13 oil wells out of 13 completions.

Mississippi.—Nearly three-fourths of the development drilling was concentrated in Eucutta, Heidelberg, and Cranfield. Eucutta led with 68 completions, 58 oil and 10 dry, closely followed by Heidelberg, with 67, including 52 oil and 15 dry. Cranfield had 36 completions, 31 oil and 5 dry.

Clay City Most Active

Illinois.—Although development drilling was widely scattered, about 40 per cent of it was concentrated in seven areas. Clay City led with 139 completions, 110 oil and 29 dry; Boyd had 75 oil and 5 dry completions for a total of 80. Bible Grove had 75 completions, 53 oil and 22 dry; Albion Consolidated also had 53 oil but only 12 dry for a 65 total. Mattoon had 65 completions in an active development, 54 oil, 1 gas, and 10 dry. Noble had 55 completions, 40 oil and 15 dry, while Thackeray was seventh with 45 total, including 34 oil and 11 dry.

Western Kentucky.—Over half the development drilling was concentrated in six pools. Uniontown led with 58 completions, 46 oil, 1 gas, and 11 dry, followed by Poole with 34 oil and 8 dry for a total of 42. Waverly had 40 completions, 32 oil, 1 gas, and 7 dry, while Dixie had 27 oil, 2 gas and 2 dry for a total of 31. In fifth place came East Poole, with 26 completions, 21 oil and 5 dry, while Huntsville with 20 oil, 1 gas and 4 dry, total 25, completed the six.

Indiana.—About one-third of the field development was concentrated in three fields, Trenton, Griffin, and Wheeling. Trenton led with 28 completions, 13 oil, 9 gas, and 6 dry. Griffin had 18, including 12 oil and 6 dry, while Wheeling split a total of 18, as 11 oil and 7 dry.

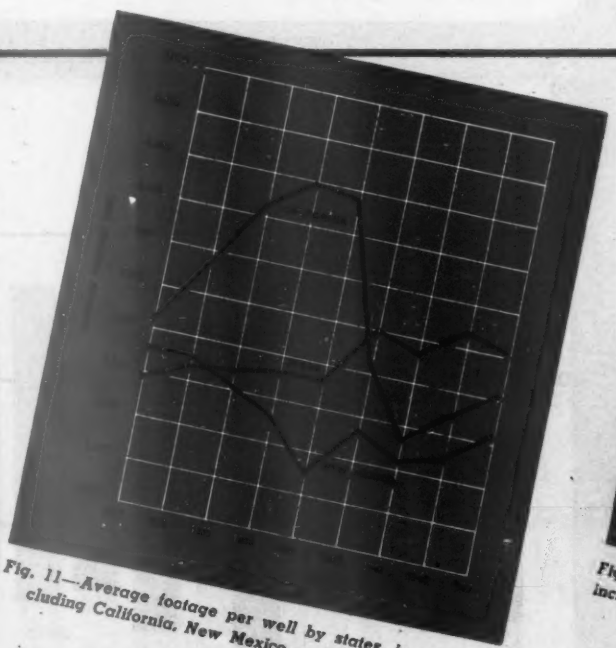


Fig. 11—Average footage per well by states, including California, New Mexico, and Texas

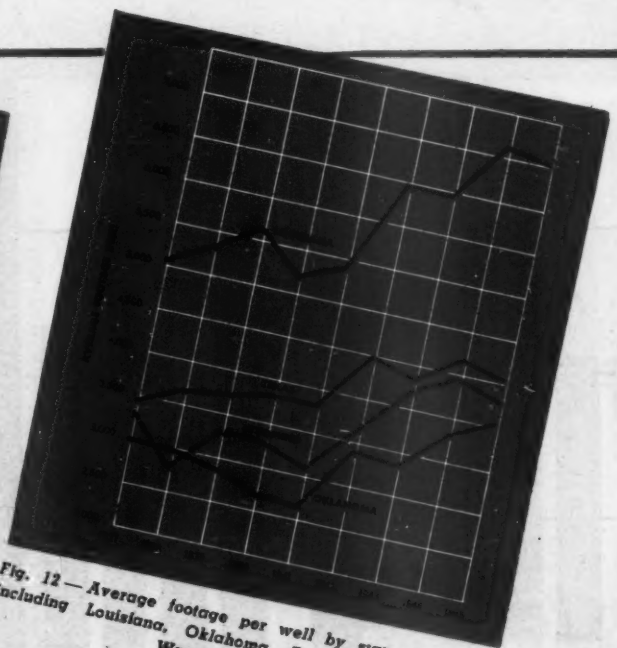
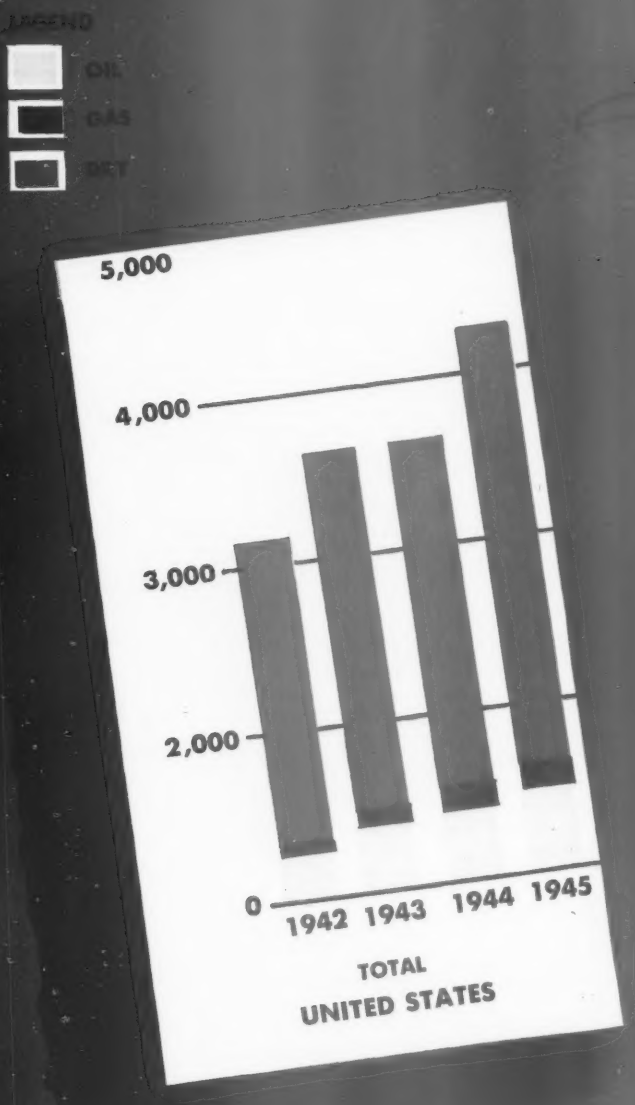


Fig. 12—Average footage per well by states, including Louisiana, Oklahoma, Texas and Wyoming

Discoveries.



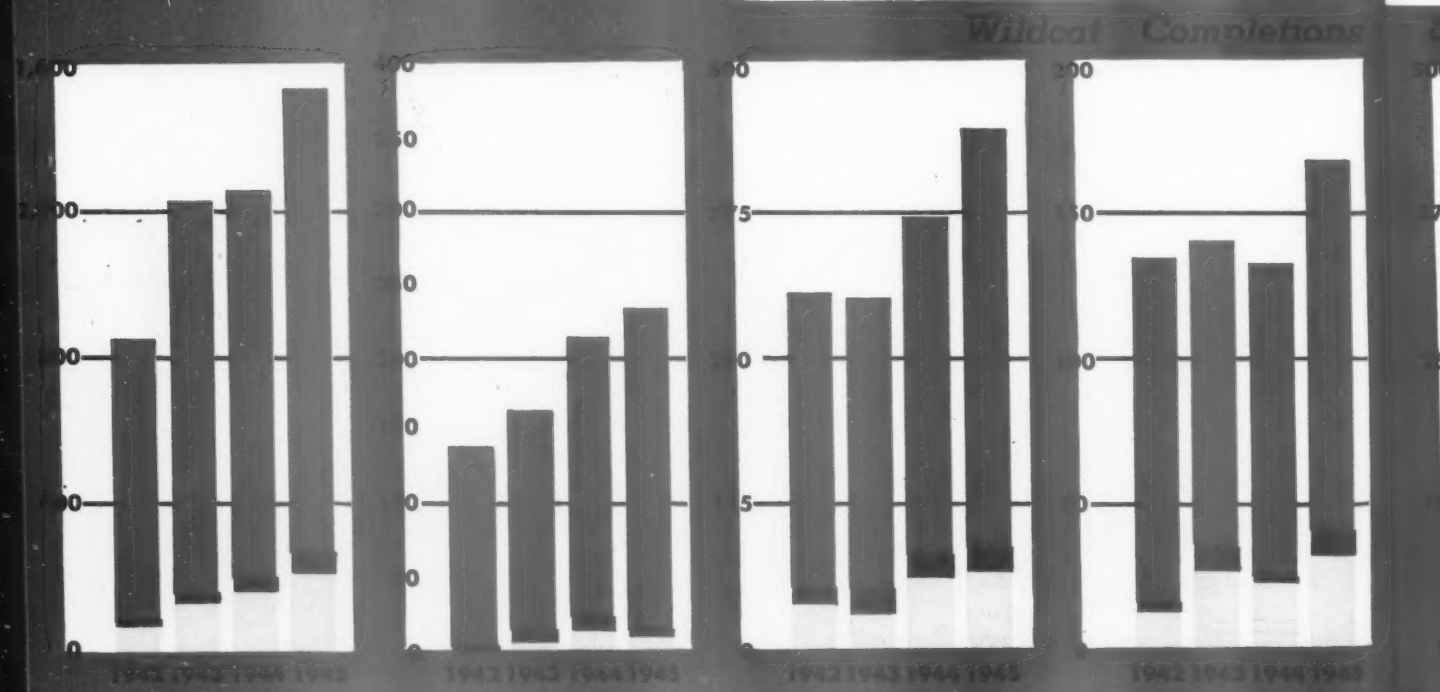
EXPLORATION during 1945 followed a general upward trend established during the preceding war years and the number of wildcat tests drilled increased sharply, but the results seem unimpressive from the standpoint of new reserves discovered.

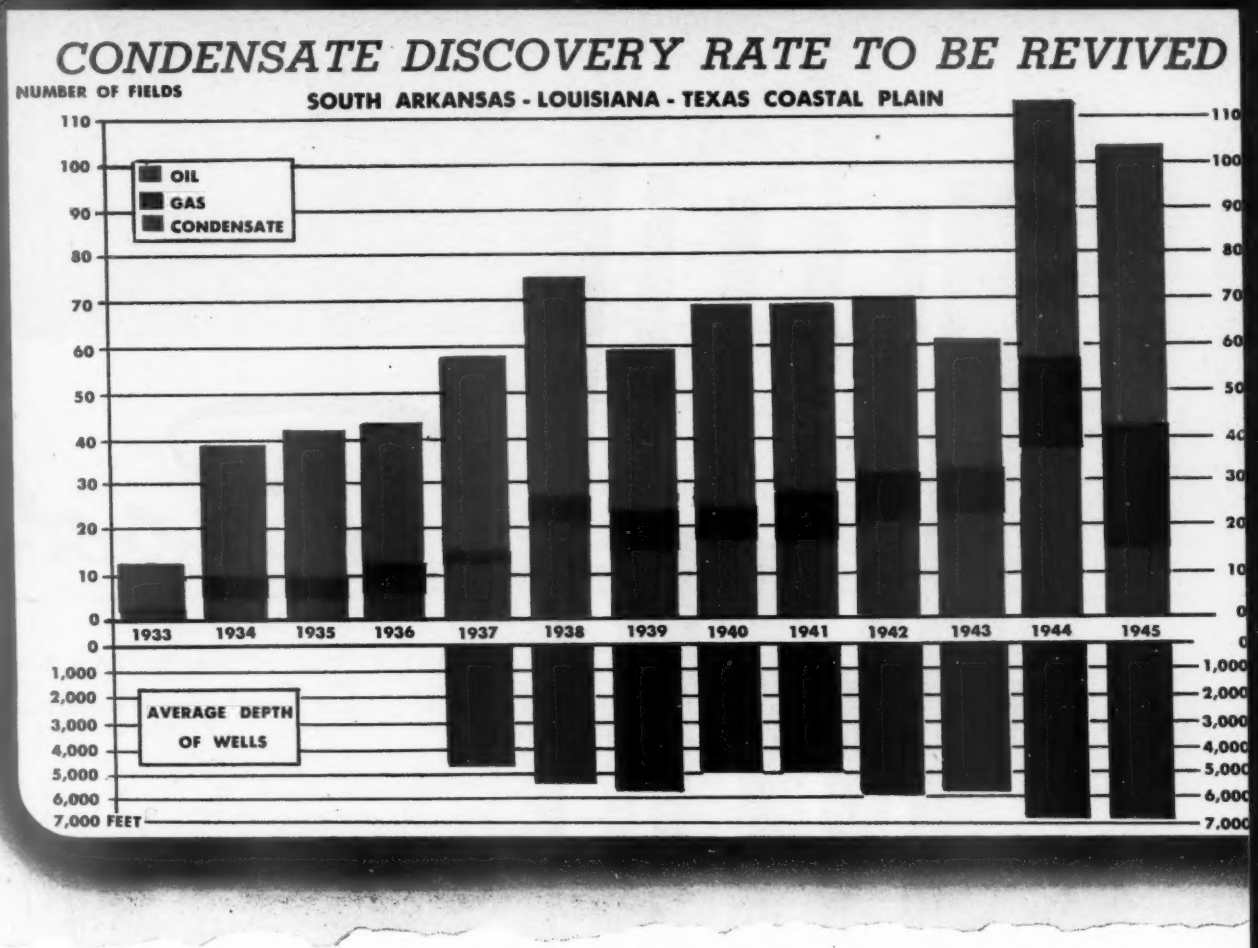
An old axiom of the industry is that "in the final test, the only way to find new oil fields is to drill wildcats." The chart for total U. S. exploratory tests shows this to be correct. As the number of wildcats increased, the quantity of new fields found also increased. The quality of the new fields, however, is another matter and those discovered in 1945, as they appear at the end of the year, have not proved important volume of new reserves.

Normally it takes about 2 years from the time a new field is discovered until any substantial daily production is developed. Under wartime conditions of shortages in manpower and materials and regional transportation tie-ups, this period of development undoubtedly is extended and a major discovery may not be recognized as such for some time. Therefore, many of the 1945 discoveries which now appear to be of minor importance may become the major producing fields of the future.

For example, full potentialities of the pre-Permian in West Texas are just now being revealed as the result of 1944 and 1945 wildcatting. Operators in this area who formerly thought only of the Ellenburger (Ordovician) as a potential producing horizon now know that the Devonian is very important, the Silurian has possibilities, and the Simpson section, very similar to the Simpson section of Oklahoma, where it has produced very large amounts of oil, has some excellent prospects.

The potential reserves indicated by further development of 1943 discoveries and the probable ultimate recoveries from the new fields of 1944 shows that relatively large proven resources may be established by fur-

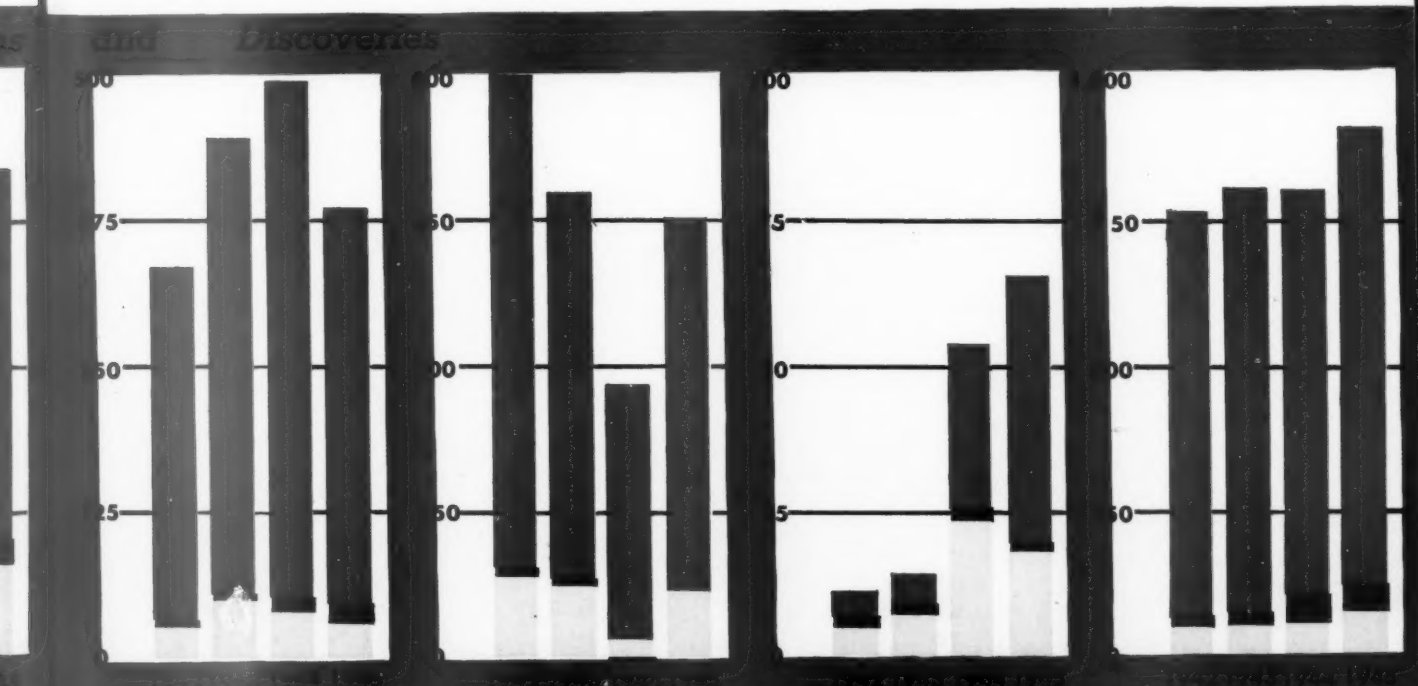


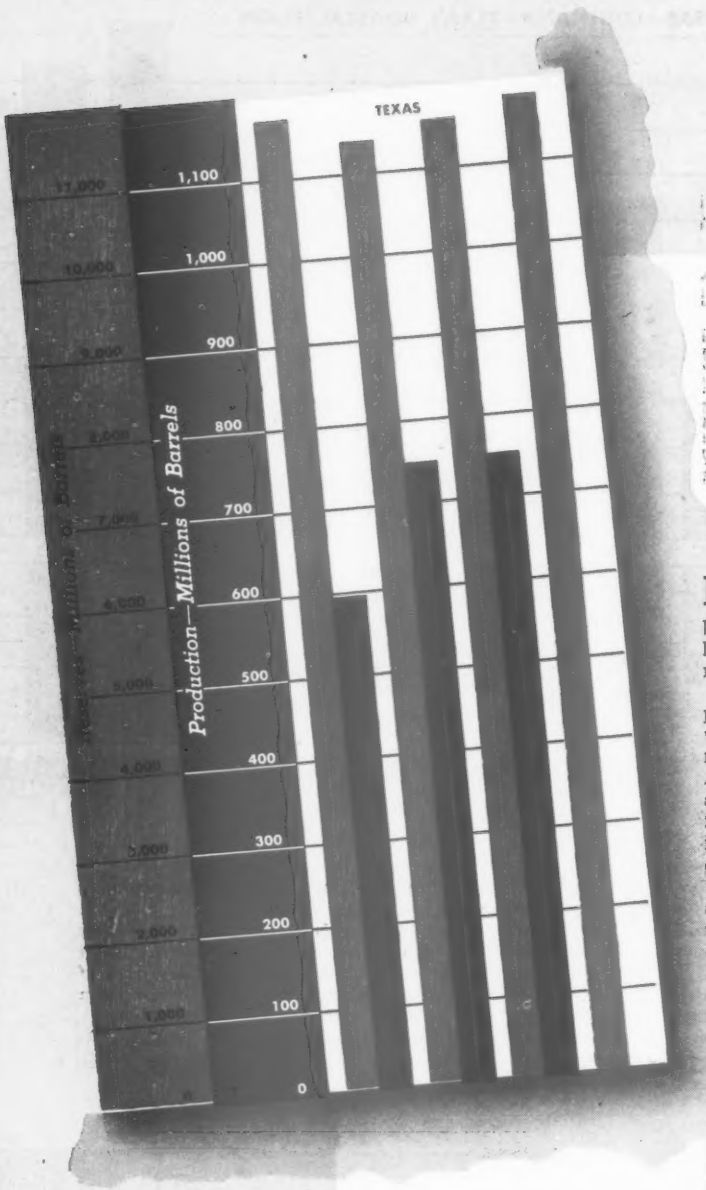


ther development of some of the new discoveries that do not look impressive at this time.

Kansas and Illinois displayed irregular downward trends since the number of new fields was small in comparison to the number of wildcats drilled and also because the majority of the discoveries were very small fields of minor importance. Louisiana, for the same reasons, was slow in picking up momentum in the wildcatting campaign. Wyoming, on the other hand, showed relatively the greatest increase in exploratory drilling of any state during 1944 and 1945, because a high percentage of the wildcats were successful.

Texas dominated the exploration program during 1945 with nearly 40 per cent of the total wildcatting. But Texas has more than 56 per cent of the total reserves of the U. S. Thus the reserve proportion is higher than the wildcat activity. Since reserves are holding up well, the answer appears to be that Texas is a better than average state in which to build up reserves by wildcatting.





Producti

DOMESTIC crude-oil production hit a new all-time peak in 1945 and the year's total of 1,711,000,000 bbl. set up a new record for annual production. In total, however, the increase over 1944 was very small—in round figures 32 million barrels.

Owing to the war and its aftermath, the pattern of production was unusual. The industry started the year with daily production slightly above the 4,700,000-bbl. mark, reached a peak of nearly 5,000,000 bbl. daily in August, then after V-J Day, the combination of slump and strikes resulted in a sharp decrease, followed by a recovery to what appears to be, at least temporarily, a reconversion period plateau of about 4,500,000 bbl. per day.

The year began with government and the military authorities calling for more and more oil. The industry responded by putting on a final drive calling on every bit of its manpower resources and the slightly increased amount of material. Week by week the production moved upward, with no slackening even after the victory in Europe. It was not an easy effort; unquestionably the industry was strained and tested as never before in its history.

In some ways the problem was made more difficult by the fact that ultimate military victory could be seen to be inevitable. Therefore there could be no national policy absolutely justifying production of many fields at rates far beyond their maximum efficient production at the ultimate cost of damaging their future reserves irreparably. Consequently the problem was one of striking a hair line balance between the maximum oil that could be produced from the great fields without damaging them, and the amount that could be obtained by new drilling with the minimum amount of material, and by stretching the manpower as far as possible. There is still some question about whether or not the total maximum efficient rate of production was exceeded, but since

tion . . .

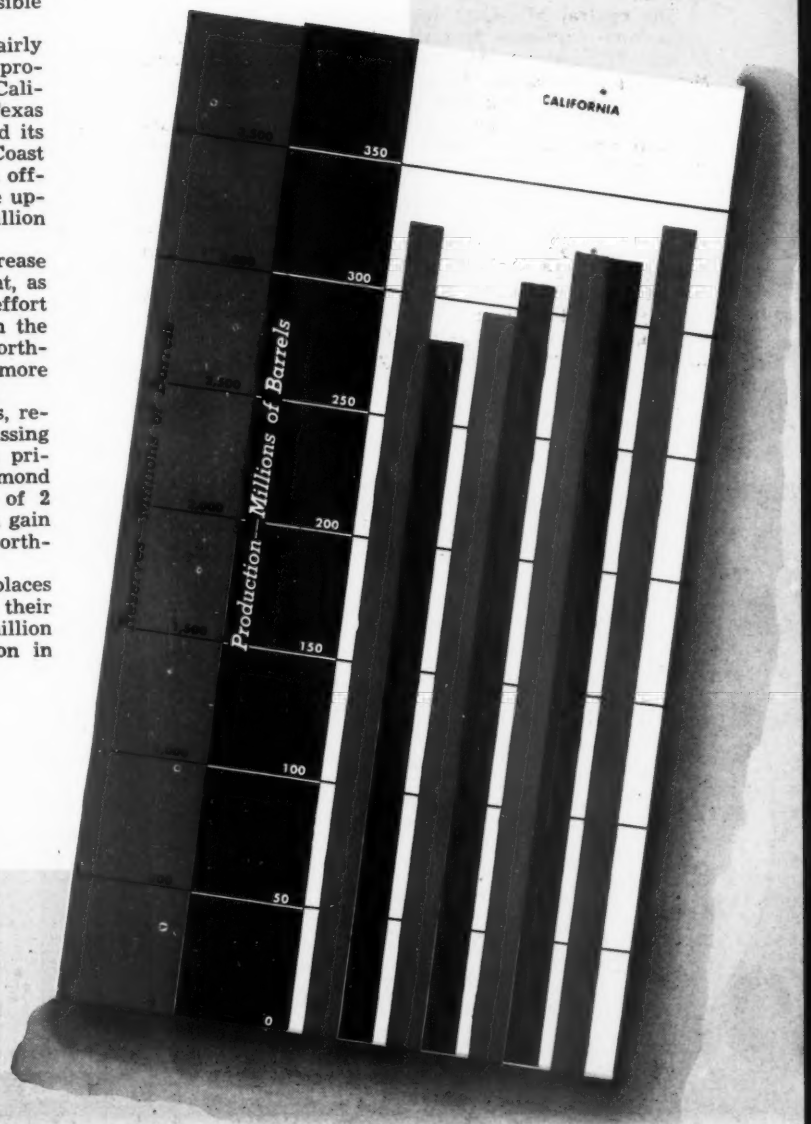
the area of disagreement represents relatively a comparatively small amount of the total oil produced, from the standpoint of the industry as a whole and the nation, the test was met successfully. For individual operators or companies, in some cases the answer may be different, and in such instances the loss is considered as part of the sacrifices of war when exact equity is impossible to achieve.

The increases in production were distributed fairly evenly. Texas of course dominated the picture and produced almost twice as much oil as second place California. The net increase of 7 million barrels in Texas was not uniformly distributed. West Texas increased its production 13 million barrels, and the lower Gulf Coast accounted for a 7-million increase. These more than offset losses of 5 million in East Texas, 4 million in the upper Gulf Coast, 3 million in the Panhandle, and 1 million in South Texas.

California's second place total represented an increase of 14 million barrels over 1944, or nearly 5 per cent, as the operators in that state broke all records for effort in the struggle to supply the mounting activities in the Pacific war. Increases of 13 million barrels in the northern area and 4 million barrels in the coastal region more than offset the 3 million loss in southern California.

Oklahoma, with an increase of 16 million barrels, regained third place among the producing states, passing Louisiana, at least temporarily. This increase was primarily the result of development in the West Edmond field. Louisiana in fourth place, had an increase of 2 million barrels, divided roughly between a 3 million gain in the southern part and a 1 million loss in the northern part of the state.

Kansas and Illinois maintained fifth and sixth places respectively, although both states failed to maintain their 1944 production pace, each decreasing about 3 million barrels. New Mexico barely maintained its position in



Production

seventh place, as it dropped off 2 million barrels from 1944, while Wyoming increased its production 3 million barrels to take eighth rank, and lacked only about 2 million barrels of replacing New Mexico.

Arkansas and Mississippi were the other two states in the top 10, and Arkansas retained ninth place by a wide margin, even though its production dropped off about 1 million barrels, while Mississippi was increasing its production by nearly 3 million barrels.

In considering the geographic distribution of the increases and decreases from 1944, it is interesting to look at the results by regional groupings, since all states were the scene of vigorous efforts to increase production by every possible means. The Appalachian area, including New York, Pennsylvania, and West Virginia, as a group had a loss of 4 million barrels from the 1944 record. The other northern and eastern group, comprising Kentucky, Indiana, Illinois, and Michigan, had practically the same record, a loss of about 4 million barrels from 1944 production.

The central Mid-Continent group of Kansas, Oklahoma, and Arkansas, had the biggest gain, 12 million barrels. The southern tier of producing states, Alabama, Mississippi, Louisiana, Texas, and New Mexico, as a group accounted for a gain of about 10 million barrels. The Rocky Mountain area came up with a 4-million-barrel gain, and California set the record with an increase of 14 million barrels of oil for the Pacific front.

LOOKING AHEAD

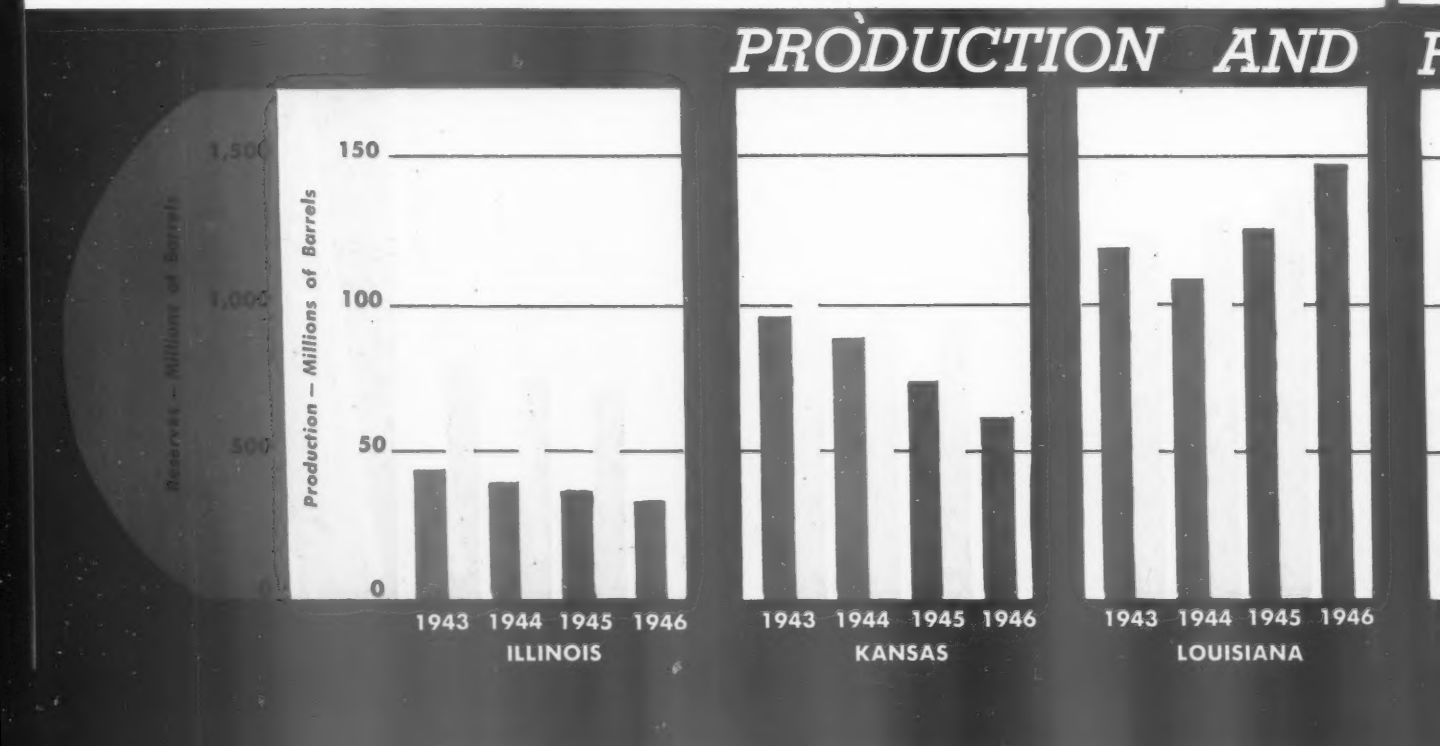
The easing of the wartime demand on the productive capacity of the country came as a welcome relief from a long sustained strain. For the moment there is the task of easing off production in those fields that, if not actually exceeding their maximum efficient rate of production, were pushing against the ceiling. Stripper production operations and secondary-recovery activities are something of a question mark until the politics of the government subsidy are settled.

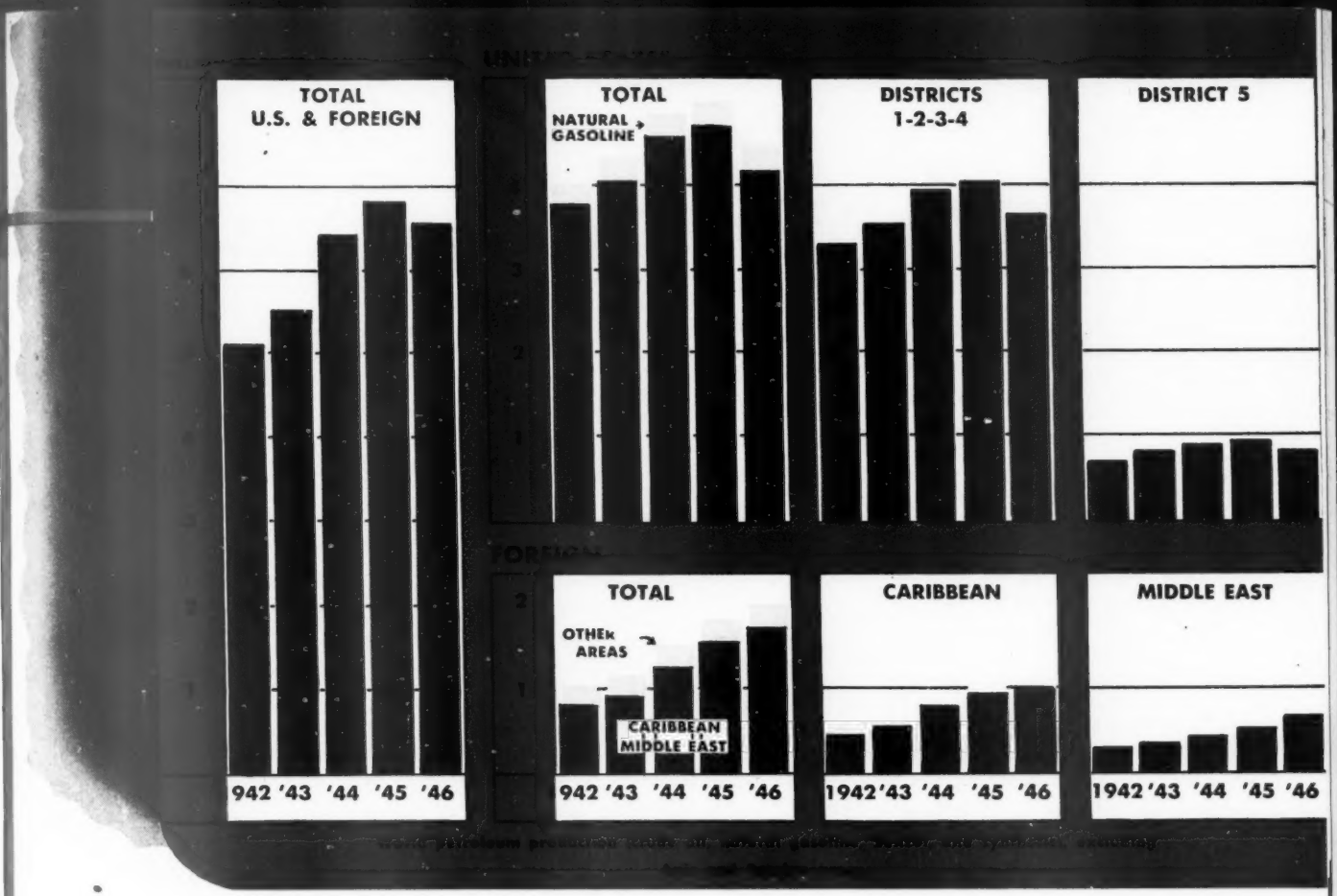
If the subsidy is wiped out, unquestionably there will be much stripper production abandoned next year, and this would have to be replaced sooner or later with new oil. New or expanded secondary-recovery projects in some areas are now considered by some companies as competitive with new production for part of the drilling and production budget. If a given amount of capital expenditure in secondary-recovery projects can produce the same or greater volume of oil than ordinary development drilling, at the same or greater profit, then more capital goes into secondary recovery and less into ordinary development.

For the long pull, there remains the problem of building up developed potential production to meet the greatly expanded demands of a postwar, fully reconverted economic system. It is generally agreed that these demands will be much larger than in the prewar period. Most companies would like to meet them with a more comfortable cushion of potential production compared to demands than during the last 2 years of the war. There are too many uncertainties about replacement costs when needs are pressing productive capacity.

Most operators are still not sure whether they made good profits, or gave away a part of their capital in fictitious earnings during the war, when replacement costs are considered. The chances are that it was a close decision for the industry as a whole, and that it about broke even on production, when replacement costs are considered.

Consequently, while there is the urge to build up production potentials to be ready for the future high demands, there is also a strong emphasis on either cost reduction or price increase, or a combination of both, in order to be sure that the high production rates will also yield a profit.



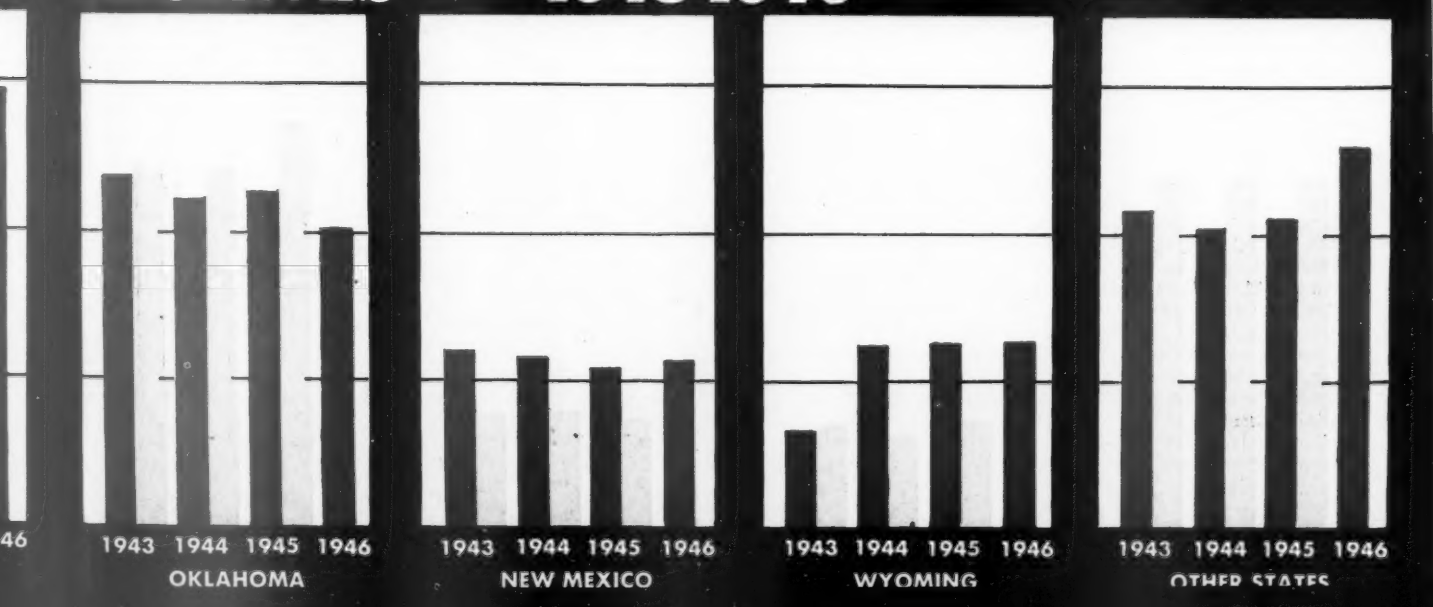


Since these factors will probably be dominant in 1946, there may be fairly substantial shifts in production, as the operators seek to develop high potential production, backed by substantial reserves, achieved at a lower cost than has prevailed during the last 2 war years.

IMPORTANT POOLS—BY AREAS

California.—More than half of the total production came from nine key fields, 166 million barrels out of the 326-million-barrel total. In order of importance these were: Wilmington, 36 million barrels; Coalinga Nose 21 million barrels; Ventura Avenue 18 million barrels; Huntington Beach 18 million barrels; Elk Hills 16 million barrels; Buena Vista Hills 16 million barrels; Midway Sunset 14 million barrels; Kettleman North Dome 14 million barrels, and Santa Maria Valley 13 million barrels.

D RESERVES — 1943-1946



Production

Rocky Mountain.—Two fields in Montana, Cut Bank 5 million barrels, and Kevin-Sunburst about 2 million barrels, account for the bulk of that state's 8½-million-barrel total. In Colorado, Rangely's 1½ million barrels and Wilson Creek with about 2 million barrels left less than 1½ million barrels to be accounted for by all other fields.

In Wyoming, five fields accounted for nearly 20 million barrels of the state's 36-million total, or more than half. These were Lance Creek 5½ million barrels, Salt Creek 4½ million barrels, Oregon Basin 4½ million barrels, Elk Basin 3 million barrels, and Byron about 2½ million barrels.

Kansas.—There are a multiplicity of pools in Kansas, particularly along the Central Kansas Uplift. Nevertheless, it is possible to account for very nearly half of the state's 96-million-barrel production by taking the eleven largest pools. Trapp-Sellens, Russell County, led with nearly 11 million barrels; Silica in Rice County produced nearly 6 million; Bemis-Shutts, Ellis County, accounted for 5 million plus; Kraft-Prusa-Feltes, Barton County, produced over 4½ million; Zenith-Peace Creek, Stafford County, produced 4 million plus; Hall-Gurney, Russell County, made nearly 3½ million; Chase, in Rice County, produced 3 million plus; Bloomer, in Barton County, almost 3 million; Stoltenberg-Wilkins, Ellsworth County, about 2¾ million; Geneseo, in Rice County, about 2¼ million, and Gorham, in Russell County, 2 million barrels plus. These eleven pools total almost 47 million barrels.

Oklahoma.—Despite its long productive history and many pools, almost half of the 1945 production came from 10 fields, many of them names that have been familiar in the industry for years. Accounting for 65 million barrels out of the total of 139 million for the state, these ten pools were: West Edmond with 26½ million; Oklahoma City 13 million; Cement 5 million plus; Cumberland 4 million plus; Pauls Valley 3 million plus. Hovering between the 2 and 3-million-barrel mark come the familiar old-time names of Burbank, South Burbank, Cushing, Glenn, and Healdton.

Illinois.—This is another state of many scattered pools, yet upon examination it turns out like the others. Seven pools out of the many accounted for more than 40 per cent of 1945's production, or almost 32 million barrels out of the state's total of 73 million. These were Louden with almost 9½ million barrels; Salem with over 6½ million; Clay City slightly over 5 million; New Harmony with almost 3½ million; Noble-Schnell 2¾ million; Bridgeport and Dale-Hoodville with slightly over 2 million each.

Michigan.—Four areas accounted for just about half of the state's total of 17 million barrels. These were Reed City with about 4¼ million; Fork and Deep River about 1½ million each, and Adams with a little over 1 million.

Arkansas.—Five pools accounted for over 60 per cent of the 1945 production of 28½ million barrels. These were Magnolia with about 5 million; Schuler with almost 4¾ million; Smackover at a little over 4 million; Midway about 2½ million, and Stephens about 2 million.

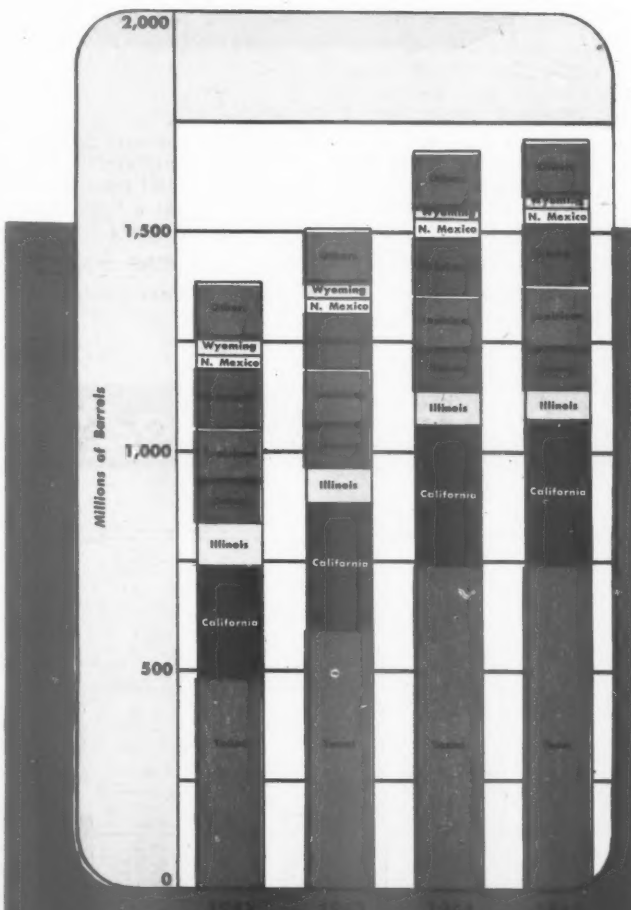
North Louisiana.—About half of the total production of nearly 26 million barrels is accounted for by five fields. Nebo led with a little over 3 million, followed by Olla with a little under 3 million. Rodessa, Cotton Valley, and Haynesville were closely grouped, all hovering about the 2½-million-barrel per year mark.

South Louisiana.—Of the total production of about 112 million barrels in 1945, nearly 60 million, or more than half, came from 21 fields. The distribution is rather different from most states, however. After Erath with 6 million plus, and Lafitte with 4 million, a group of five fields fell into the 3 to 5-million-barrel class. These were Delta Farms, Gibson, Grand Bay, Paradis, and Venice. This was followed by another group of 14 fields, all in the 2 to 3-million-barrel group. They were Anse La Butte, Bayou Sale, Eola, Golden Meadow, Grand Bay, Gueydan, West Hackberry, Iberia, Iowa, Jennings, Neale, Quarantine Bay, Ville Platte, and Vinton.

Mississippi.—Although still in a very promising development stage and with great future potentialities, Mississippi still got nearly half of its 1945 production of 19 million barrels from the relatively old Tinsley field, which produced over 9 million barrels. Among the newer fields, Cranfield, Eucutta, and Heidelberg produced between 2 and 3 million barrels each.

Eastern Texas.—The great East Texas field of course dominated this district with 131 million barrels production out of the 179 million total. But of the remaining 48 million, Van produced 10½ million barrels and Talco 8¼ million.

North Texas.—This has always been an area of many small pools, and it still remains that. However, nearly



one-third of the district's 54-million-barrel production in 1945 came from four fields. K.M.A. still holds the dominating position and produced over 8 million barrels last year, followed by the Hull-Silk-Sikes area of Archer County with about 4 million. Walnut Bend, in Cooke County, produced about 2½ million barrels, and the Hildreth pool in Montague County accounted for a little over 2 million.

West Texas.—In contrast to North Texas, 10 large fields accounted for about two-thirds of the 1945 production in the Permian Basin, yielding about 116 million barrels out of the district's total of 175 million. In order, these ten fields are Slaughter and Wasson, with a little over 23 million barrels each, followed by Yates with about 13 million, McElroy and North Cowden with about 10 million each, to make up the first five. In the second group, Goldsmith and Seminole each produced about 8 million barrels, while Keystone, Fullerton, and Foster each produced between 6 and 7 million barrels.

Upper Gulf Coast.—Eight fields produced over 100 million barrels, or about half of the district's total production of 188 million. Conroe, Hastings, and Webster (Frendswood) produced about 20 million barrels each, Thompson produced over 12 million, Anahuac about 11 million, followed by West Ranch and Stowell with about 7 million each, and Old Ocean with about 6 million.

Lower Gulf Coast.—Five fields produced over half of the district's 1945 total of 85 million barrels. Tom O'Connor produced nearly 18 million barrels, Seeligson, which had been slow in showing its true potentialities, was second with nearly 11½ million barrels, followed by Agua Dulce with over 7 million, East White Point with over 4 million, and Greta with over 3 million barrels.

New Mexico.—Four fields in southeast New Mexico accounted for nearly 60 per cent of the state's 1945 production of about 38 million barrels. Monument led with a little over 7 million barrels, followed by Eunice with almost 6 million, Vacuum with a little over 4 million, and Hobbs with a little under 4 million barrels.

In summary, 1945 domestic crude-oil production established an all-time record with but a slight increase over 1944. The high rate of production was mainly due to increased withdrawals from the older fields. Some of the nation's great fields, in exceeding the MER of production, have lost a substantial part of their reserves forever by pulling the wells too hard to meet the increased demand for petroleum products during the war.

A study of the production record of the 75 largest fields affords some interesting data. Of the 1945 leaders, more than 40 are over 10 years old, and a high percentage of the remainder are between 6 and 10 years of age. Although several new fields are found in this list, only one of these, the West Edmond field of Oklahoma, has reached a prominent position. This field is the outstanding discovery of recent years and is the only one to surpass a production mark of 25,000,000 bbl. annually.

Analysis of these facts suggests that the older fields of the country, although in a declining stage of production, were able to meet a large part of the increased wartime demands in a period when exploration failed to uncover sufficient new oil for this purpose. East Texas is the only remaining field in the 100,000,000-bbl. class. The other fields in this group, such as Oklahoma City, Salem and Louden, fell below that mark long ago, and have not been able to increase their output during the past few years.

PRODUCTION IN UNITED STATES, 1939-45
(In thousands of barrels)

	1939	1940	1941	1942	1943	1944	1945	Change	Producing wells 1-1-46	Daily avg. bbl. per well	Cumulative prod. 1-1-46
Arkansas	21,238	25,775	26,327	26,628	27,600	29,418	28,565	—853	3,187	24.6	665,720
California	224,354	223,881	230,263	248,326	284,188	311,793	325,995	+14,202	24,882	35.9	7,011,694
Colorado	1,404	1,626	2,150	2,199	2,320	2,944	4,862	+1,918	240	55.5	54,697
Illinois	94,912	147,647	132,393	106,391	82,260	77,413	73,460	—3,953	27,915	7.2	1,160,129
Indiana	1,711	4,978	7,411	6,743	5,283	5,118	4,758	—360	2,392	5.4	152,220
Kansas	60,703	66,139	83,242	97,636	106,178	98,762	96,496	—2,266	26,692	9.9	1,567,333
Kentucky	5,621	5,188	4,762	4,534	7,883	9,621	9,938	+317	14,741	1.8	169,485
Louisiana	93,646	103,584	115,908	115,785	123,592	129,207	137,409	+8,202	7,914	47.6	1,704,943
Michigan	23,462	19,753	16,359	21,754	20,768	18,490	17,278	—1,212	3,548	13.3	239,710
Mississippi	107	4,400	15,327	26,833	18,807	16,337	19,024	+2,687	649	80.3	102,951
Montana	5,960	6,728	7,526	8,074	7,916	8,627	8,507	—120	2,205	10.6	124,568
Nebraska	2	276	1,898	1,237	635	417	219	—198	70	8.6	4,933
New Mexico	37,637	39,129	39,569	31,544	38,896	39,555	37,686	—1,869	4,249	24.3	449,652
New York	5,098	4,999	5,185	5,421	5,059	4,697	4,572	—125	22,144	0.6	153,189
Ohio	3,156	3,159	3,510	3,543	3,322	2,937	2,841	—96	23,184	0.3	601,144
Oklahoma	159,913	156,164	154,702	140,690	123,152	124,616	139,379	+14,763	52,688	7.2	5,452,304
Pennsylvania	17,382	17,353	16,750	17,779	15,757	14,118	12,237	—1,881	82,655	1.5	1,074,942
Texas	482,528	498,209	505,572	483,097	594,343	748,122	749,373	+1,251	103,514	19.8	9,667,698
West Virginia	3,580	3,444	3,433	3,574	3,349	3,070	2,820	—250	16,857	0.5	429,692
Wyoming	21,454	25,711	29,878	32,812	34,253	32,388	36,319	+3,931	3,983	25.0	667,881
Miscellaneous	94	71	63	45	52	103	202	+99	237	2.3	1,528
Total	1,264,962	1,353,214	1,402,228	1,386,645	1,505,613	1,677,753	1,711,940	+34,187	423,948	11.1	31,456,413
Daily average	3,466	3,697	3,842	3,799	4,125	4,584	4,690	+106	.... ..	....	.....

THE OIL AND GAS JOURNAL PUMPING SURVEY

State or district—	Wells put on pump during 1945	Wells likely to go on pump or artificial lift during 1946	No. of artificial lift units needed in 1946*	Estimated replacement cost of obsolete units
Alabama	7	7	7	14,000
Arkansas	86	107	99	206,550
California	1,267	1,231	1,218	3,620,490
Colorado	32	32	32	62,000
Florida	1	1	1	2,000
Illinois	795	803	695	919,800
Indiana	83	137	137	110,100
Kansas	629	704	761	1,468,444
Kentucky	287	295	293	586,200
Louisiana	484	685	668	815,500
North Louisiana	179	209	188	315,700
South Louisiana	305	676	500	499,800
Michigan	195	135	45	141,300
Mississippi	148	110	82	164,000
Missouri	0	1	1	1,050
Montana	163	124	113	143,100
Nebraska	0	1	1	1,000
New Mexico	209	383	383	584,720
New York	536	672	711	1,422,000
Ohio	170	150	138	118,125
Oklahoma	1,070	1,076	1,036	1,353,660
Pennsylvania	1,341	1,305	945	1,980,000
Tennessee	0	1	1	2,000
Texas	3,429	4,169	3,835	4,854,480
East Texas	519	569	444	552,500
North Texas	706	690	673	1,277,450
South Texas	148	112	112	200,000
Lower Gulf Coast	432	494	473	619,500
Southwest Texas	32	67	67	133,000
Upper Gulf Coast	328	613	494	451,500
Panhandle	132	133	133	158,400
West Texas	982	1,337	1,286	1,109,580
West Central Texas	150	154	153	352,550
West Virginia	69	69	68	164,600
Wyoming	124	125	118	237,500
Total	11,125	11,328	11,358	18,952,359

*Exclusive of used equipment.

MORE than 11,000 oil wells will go on pump during 1946, requiring 11,358 new installations of all types for artificial lifting of crude oil, according to a year-end survey made by the Journal. Latest figures available indicate that the current manufacturing rate of pumping units exceeds 1,000 per month, highest since the beginning of the war; but this is still insufficient to meet the requirements.

Reports to the Journal indicate that operators expect to place 11,328 wells on pump during the year. This includes former flowing wells which will not sustain production without artificial lift and new completions which require some means of artificial lift from the start of their productive life.

Texas leads all states in the number of wells likely to require pumping units, with an estimated need of 3,835 artificial lifting units of all types. The West Texas district alone will require more units than any other single state. However, California and Oklahoma also show high requirements, 1,218 and 1,036 units respectively. This is due to the fact that recent discoveries in these states are not of the type characterized by fields with long flowing life. In addition, flowing wells in a good many of the older areas in these states are playing out and will require artificial lift in the near future.

According to the latest report of the Materials Division, Petroleum Administration for War, pump manufacturers had backlog orders covering 5,929 units on August 1, 1945. The peak manufacturing rate at that time was 1,015 units per month. The current rate does not show a substantial increase and is hardly more than adequate to cover new requirements. Some pumping units will be available from wells plugged during the year, but the majority of the requirements will have to be supplied by the manufacturer. Therefore, unless the rate of manufacture can be stepped up in the near future, the backlog can be modified only slightly during 1946, and complete liquidation will require many additional months.

In 1945, 11,125 oil wells were put on pump, 203 less than the number estimated for this year. However, the oil industry expects to complete 3,451 fewer wells in 1946 than during the preceding year according to the Journal's drilling survey. This probably means that a relatively large percentage of the wells to be completed this year are expected to require artificial lift. The answer to this seems to be that the fields discovered during recent years and now being developed are small, and wells completed in these fields either have a very short flowing life or require artificial lift from the time of completion.

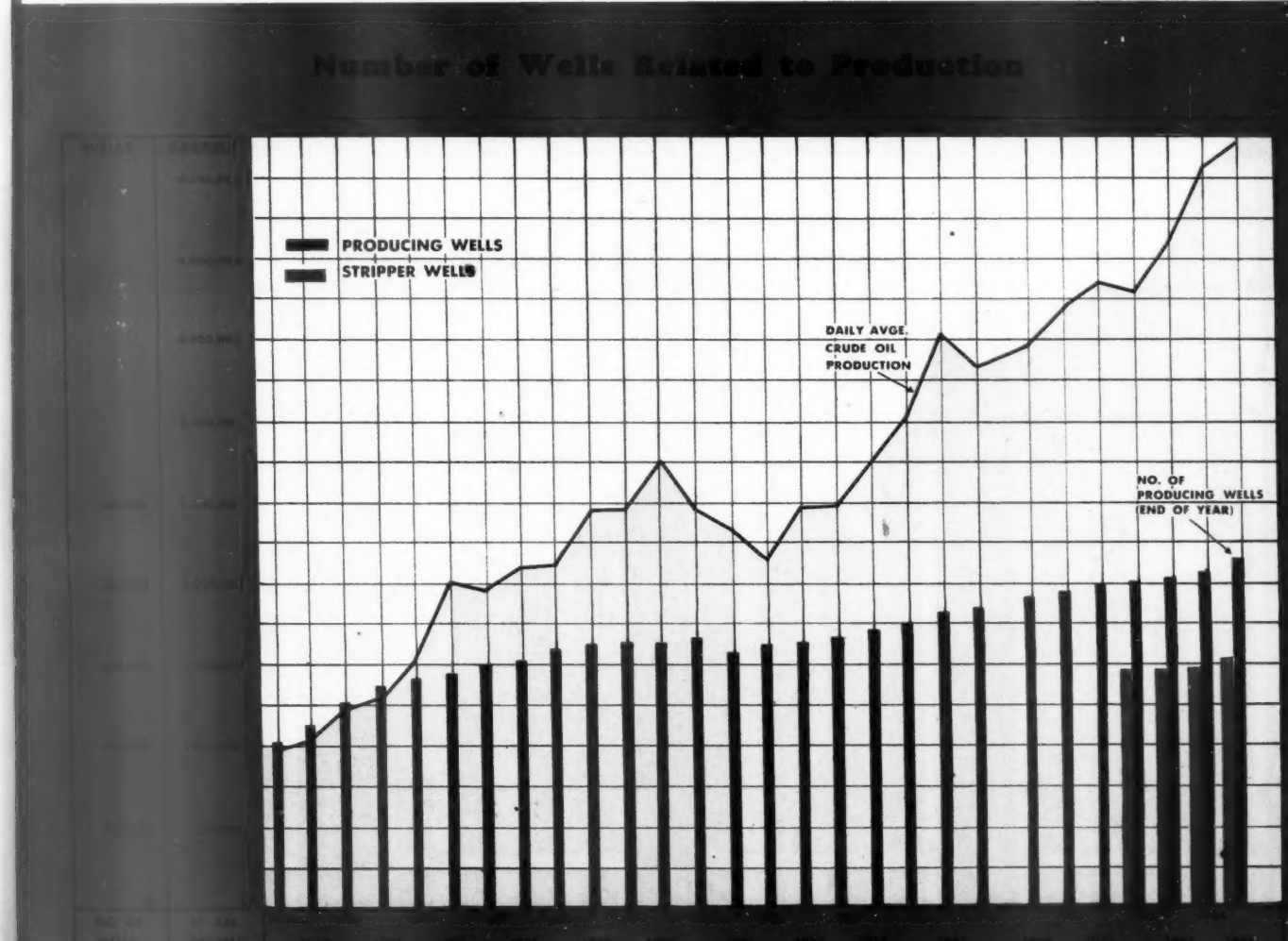
Also, many wells which are flowing at present have expended so much of their energy that they will have to be put on pump in the near future if they are to continue to be productive. The flowing life of numerous wells has been shortened in many cases by the necessity for exceeding the maximum efficient rate of production in order to meet the increased requirements of a nation at war. This factor has increased the number of wells brought to the pumping stage, although they may have been completed in prewar years.

Pumping Equipment

In certain fields, operators are wisely equipping wells with pumping facilities before they cease to flow. This eliminates long periods of interrupted productivity which would prevail if operators waited to order pumping equipment until the wells stopped flowing. This practice was particularly encouraged during the war and will continue to be sound operating practice in the future in fields where the flowing life of a well can be estimated with enough accuracy to permit economic timing in the installation of the equipment.

Of the total number of producing oil wells in the United States, 296,388, or 71.8 per cent, are classified as stripper wells and require pumping. Since these wells supply nearly 13 per cent of the total United States production, it is highly desirable that the production from these wells be maintained. It has also become a matter of great importance that the reserves underlying stripper wells be preserved, because many oil fields, damaged by high rates of production, have lost a substantial part of their reserves forever by pulling the wells too hard to meet increased wartime requirements.

Most of these stripper wells, as well as many of the newer completions, are now being pumped by obsolete and inefficient equipment. Because of material shortages throughout the past 3-year period, operators have been forced to compromise on the installation of pumping equipment, and the obsolete units now in use would have been junked in times of normal supply.


Number of Wells Related to Production
PRODUCING WELLS
STRIPPER WELLS
DAILY AVGE. CRUDE OIL PRODUCTION
NO. OF PRODUCING WELLS (END OF YEAR)

Reserves . . .

THE year 1945 was a disappointment in that a tremendous exploration campaign failed to find new discoveries of substantial size. The year was a very substantial success, in that the total proven reserves at the end of the year showed that 2,275,000,000 bbl. had been found, and after deducting a record-breaking total production of 1,712,000,000 bbl., the industry's proven-reserve inventory showed a net addition of 563,000,000 bbl.

These two statements appear to be flatly contradictory, yet both are true. As a matter of fact, aside from changes in the figures, these same seemingly contradictory statements could have been made at the end of almost any one of the past several years, particularly during the war. There are probably several explanations and combinations of explanations. The probabilities are that changing conditions are responsible, and that some of the old established methods of gaging the success of a year's exploration efforts are not applicable to the new conditions. It is a subject on which the industry's economists, geologists, and executives might well collaborate in investigating.

The only real question involved is whether the industry is finding oil fast enough to meet the future demand. In the over-all picture, it is immaterial whether the oil shows up in the new-discovery column or in the extensions-and-revisions column. If there is enough oil to meet the increased demands of the expanding markets that lie ahead, no one will care where and when it is found. If there isn't enough oil, there will be far more searching questions than a simple query of which column fell short.

Fortunately in preparation for reconversion, several thorough analyses of the probable postwar period demands were made, extending through to 1950. On the basis of these, The Oil and Gas Journal (November 18, 1944, page 152) made its own analyses of the various problems involved and determined what rate of finding new oil would be required. That answer was that an average of 2 billion barrels per year must be found in the 7-year period, 1944 to 1950 inclusive, or a total of 14 billion barrels.

Since the total new oil found by various means in 1945 was 2,275,000,000 bbl., the over-all result was good. The 2-billion goal was met plus a 13.7 per cent safety margin. Moreover, this was a slight improvement over 1944, when the goal was also met. In 1944 we produced

1,680,000,000 bbl. and also added 469,000,000 bbl. to total reserves. For 1944 then the total new oil from all sources was 2,149,000,000 bbl., or 10.7 per cent in excess of the 2-billion average requirement.

The years 1944 and 1945 have certainly been the most difficult in the history of the industry with regard to meeting demands, finding new oil, and maintaining proven reserves, under all the handicaps of war conditions. Yet the record shows that in the 2 years, from various sources, the industry found 4,424,000,000 bbl. of new oil. The best forecasts of the future that can be made, indicate that 2 billion barrels per year will be sufficient, at least through 1950, which is certainly far enough for any industry to look ahead at this time. If the industry could exceed those requirements by 10 per cent in two of the toughest war years, with all the handicaps of material and manpower shortages, there is no reason to be pessimistic about the near future.

No one in the industry cares to repeat the strain of the past 2 years; a strain that took heavy toll not only of material but of men's nerves and health. But with the return of the industry's manpower from the services, and a steadily increasing flow of materials, there is no reason why the same or greater results cannot be achieved with a far less nerve-wracking effort.

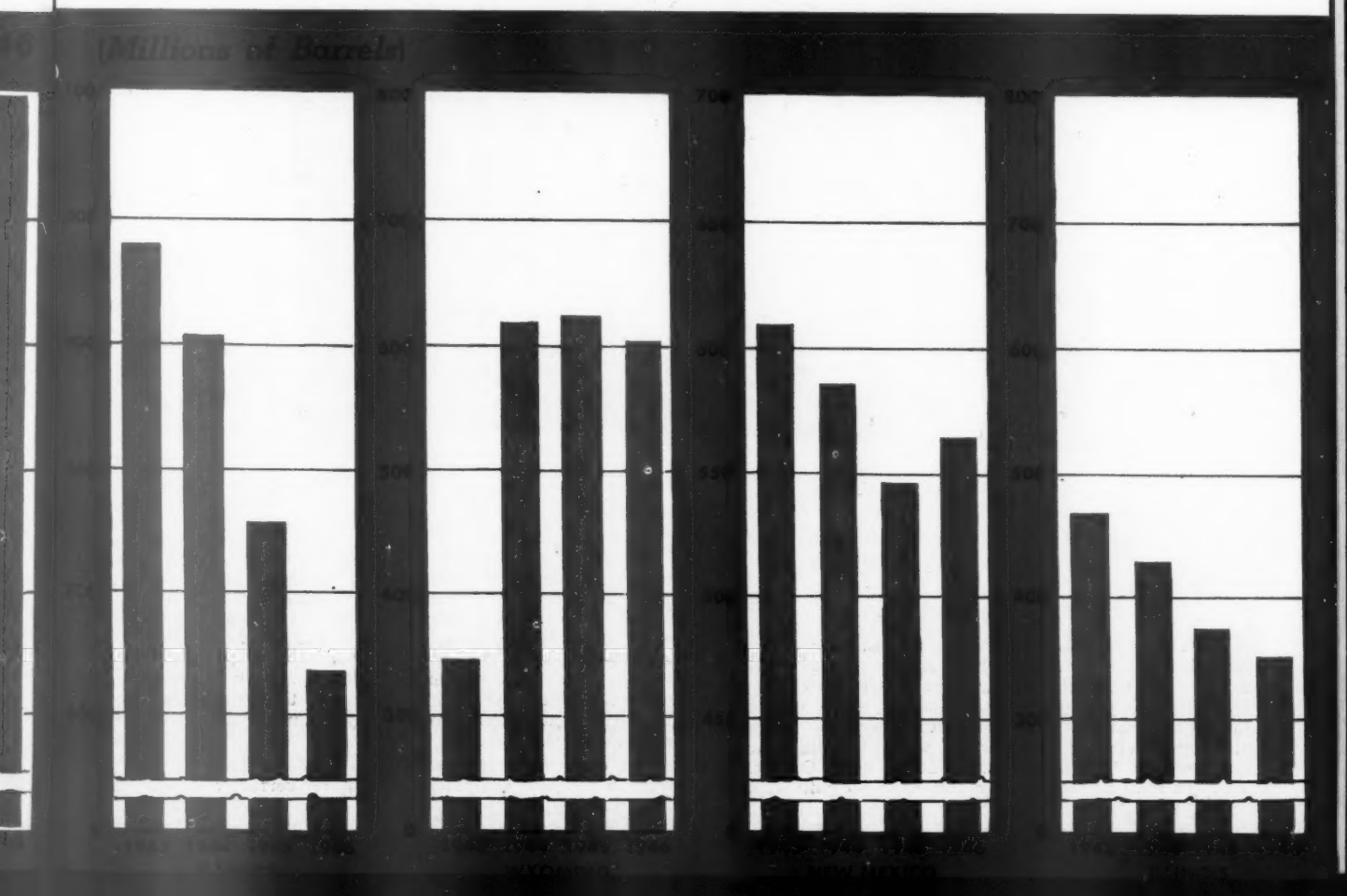
Looking over the geographical distribution of the proven reserves at the end of 1945, it is obvious that the bulk is still concentrated in a few states. Among the top five states, Texas, California, Louisiana, Oklahoma and Kansas, there has been no change in relative rank. Adding the three Rocky Mountain states as a unit to these five, gives an area in which 91.4 per cent of the 1945 reserves are concentrated. A year ago, this same area accounted for 91.1 per cent of the total reserves.

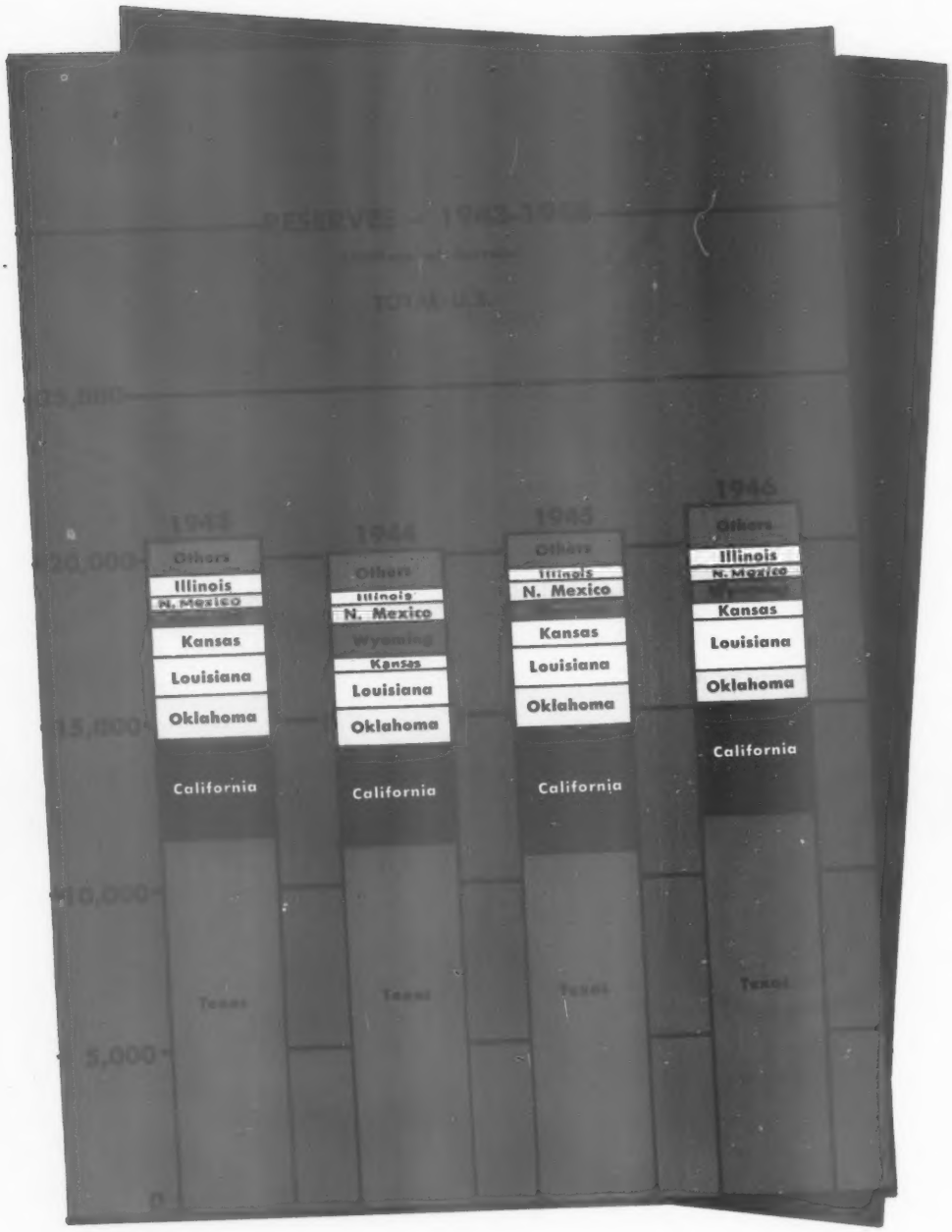
Texas retains its commanding position, accounting for over half of the total reserves in the entire United States. Within the state there are some changes. The Panhandle and North Texas slipped, West Texas increased its relative position, as did Eastern, while the Upper and Lower Gulf lacked only a little of holding their own. It is worthy of note that although Texas was one of the states hardest hit by the various effects of the war, it has produced nearly 1½ billion barrels during the past 2 years and added nearly 400 million net barrels to its proven reserve during the same period. Carrying the largest wartime burdens, under probably the greatest handicaps over a 2-year period, it missed by only 5 per cent in supplying half of the 2 billion barrels per year of new oil required to meet the estimated postwar demand.

California Discoveries Disappointing

California is another of those states in which the new oil discoveries seem disappointing, yet which comes up year after year with more reserves after meeting record-breaking production requirements. It actually increased its relative reserve position in the United States during 1945, creeping up to 16.3 per cent of the total, compared to 16.0 last year. During a trying 2 years of war in which it bore the brunt of supplying the Pacific front, it produced 638 million barrels, yet increased its reserves by 452 million barrels.

Louisiana easily maintains third place in proven reserves, although it has temporarily yielded that position in production to Oklahoma. Oklahoma and Kansas retain fourth and fifth places respectively in the proven-reserves column, although both of them slipped during 1945 and failed to find enough new oil to meet production requirements. The three Rocky Mountain states combined, Montana, Wyoming, and Colorado, increased their percentage of the total U. S. reserves from 3.6 per cent





in 1944 to 4.5 per cent at the end of 1945, thanks mostly to Colorado's climb of almost 150 million barrels in reserves.

Five States Improve Positions

In terms of net addition to the proven-reserve inventory, five states accounted for net additions of 914 million barrels; the remaining states, as a group, drew on and lowered their previous proven reserves to the extent of 351 million barrels. The five states and their increases in reserves were: first, Louisiana with 247 million additions; second, Texas, with 220 million; third, California, with 152 million; fourth, Colorado, with 148 million; and fifth, Mississippi, with 147 million.

It is interesting to note that of the five states, three are leading oil-producing states, Texas, California, and Louisiana. Mississippi is a fairly new oil state, which is just beginning to develop its potentialities. Colorado is one of the oldest oil-producing states, but has never produced large quantities of oil. The development of one field, Rangely, into major caliber by drilling, while waiting on pipe-line outlets to permit the wells to be produced steadily, was sufficient to practically quadruple its proven reserves.

The term "proven reserves" is used in the narrow sense in all these estimates. The figures certainly do not

include any "potential reserves," although there are many cases where it is almost certain that ultimately a great deal more oil will be found and produced than is indicated by the figures given this year. A few instances will clarify this.

In Wyoming, the industry has sufficient evidence on which it is spending millions of dollars, to be sure that there will be substantial volumes of oil found in many deep fields in the inner basins, on the rims of which are the shallow structures that are now producing. A "potential reserve" of a billion barrels for the whole area would not be out of line. Yet this would be substantially in excess of the amount of reserves now carried as "proven" for the entire state.

Anadarko Basin Proven Productive

In Oklahoma, the greater Anadarko basin takes in the greater part of the western half of the state, and includes parts of southwest Kansas and southeast Colorado. Oil has been found in substantial quantities in the southeast end of this basin, and also near the extreme northwest end, and in many places along both the north and south rims. It is quite possible that Oklahoma may find and produce more oil in the future than it has in the past. But except for those areas in and immediately adjacent to producing wells, none of this "potential oil reserve" is included in Oklahoma's proven reserves.

In Texas the same thing could be said about several areas, but one of the most striking examples applies not only to Texas but to other coastal states. The potential oil possibilities lying offshore can easily be estimated in billions of barrels. For one thing, in many places the sediments were laid down in wedge shapes, with the thinner part of the wedge on what is now dry land, and the thickest part under water. Under such circumstances, each horizontal square mile offshore, lies above a much larger number of cubic miles of potential oil-bearing sediments, than a horizontal square mile on land.

Potentialities Are Excluded

The industry needs and uses the annual estimates of proven reserves, but the trend for many years has been for each group that makes such an estimate to be more and more rigid in excluding "potentialities," and to stick closer and closer to "strictly proven" territory. Such trends do not develop by accident. On the contrary, they usually arise out of the uses to which the estimates are put after they are made.

It is rather significant that among the larger companies, which have more at stake than anyone else in the industry, more and more use is made of such estimates as a basis from which to measure their relative competitive position within the industry. Still another common use is in figuring what reserves of raw material back up certain refineries and transportation facilities.

On the whole, there is evidence that whatever proven reserves estimates may have been intended for originally, in practice they are becoming a yardstick for measuring the industry's assured raw-material inventory. This may well account for the conservative practices used in making such estimates.

PROVEN OIL RESERVES, JANUARY 1, 1946

(In thousands of barrels)

Estimated reserves as of 1-1-45	1945 discoveries	Extensions and revisions	Total	Less 1945 production	Estimated reserves as of 1-1-46	Gain or loss (—)	Per cent U. S. total
11,520,227	62,570	+907,227	12,490,024	749,373	11,740,651	+220,424	55.7
520,700	0	—99,832	420,868	31,551	389,317	—131,383	1.8
2,958,340	35,900	+268,510	3,262,750	174,706	3,088,044	+129,704	14.7
602,050	8,460	—73,244	537,266	54,528	482,738	—119,312	2.3
3,261,610	1,100	+335,297	3,598,007	179,518	3,418,489	+156,879	16.2
354,095	1,920	+46,870	402,885	34,438	368,447	+14,352	1.7
1,122,500	7,600	+157,316	1,287,416	86,365	1,201,051	+78,551	5.7
2,700,932	7,590	+272,310	2,980,832	188,267	2,792,565	+91,633	13.3
3,279,387	48,356	+429,806	3,757,549	325,995	3,431,554	+152,167	16.3
1,044,102	20,401	+140,711	1,205,214	111,409	1,093,805	+49,703	5.2
518,830	21,251	+123,016	663,097	53,743	609,354	+90,524	2.9
1,716,455	6,704	+166,079	1,889,238	160,843	1,728,395	+11,940	8.2
1,246,543	14,540	+370,196	1,631,279	137,409	1,493,870	+247,327	7.1
253,180	4,340	+67,686	325,206	25,604	299,602	+46,422	1.4
993,363	10,200	+302,510	1,306,073	111,805	1,194,268	+200,905	5.7
1,138,139	11,420	—6,761	1,142,798	139,379	1,003,419	—134,720	4.8
752,754	9,390	—33,736	728,408	96,496	631,912	—120,842	3.0
619,810	2,320	+16,216	638,346	36,319	602,027	—17,783	2.9
541,926	5,360	+50,512	597,798	37,686	560,112	+18,186	2.7
361,747	10,300	+42,489	414,536	73,460	341,076	—20,671	1.6
152,766	12,600	+153,871	319,237	19,024	300,213	+147,447	1.4
326,768	500	—9,797	317,471	28,565	288,906	—37,862	1.3
57,920	0	+152,978	210,898	4,862	206,036	+148,116	1.0
121,008	0	—395	120,613	12,237	108,376	—12,632	0.5
92,680	1,660	+8,560	102,900	8,507	94,393	+1,713	0.4
96,035	780	—5,838	90,977	17,278	73,699	—22,336	0.4
66,168	0	+8,232	74,400	4,572	69,828	+3,660	0.3
49,851	3,200	+1,821	54,872	9,950	44,922	—4,929	0.2
33,000	0	+4,922	37,922	2,820	35,102	+2,102	0.2
31,012	0	—3,058	27,954	2,841	25,113	—5,899	0.1
25,503	310	+3,764	29,577	4,758	24,819	—684	0.1
1,495	400	+291	2,186	190	1,996	+501	
20,514,739	183,706	+2,091,300	22,787,745	1,711,721	21,078,024	+563,285	100.0

Refining . . .

RETIREMENT of obsolete equipment, installation of modern processing units required by competitive conditions and rehabilitation and modernization of facilities which were operated at inordinately severe rates during the past 4 years presage one of the most active years ahead in the history of refinery construction. The pace in the octane race is exceedingly brisk. Every refinery technologist in the industry is giving full attention to the problem of placing or maintaining his company in a strong competitive position from a standpoint of motor-fuel quality.

There will be little or no need for construction of new crude-oil capacity during the next 5 years. However, the requirements for higher quality motor gasoline and special products, including base materials for chemicals, better lubricants, and cleaner fuels constitute technical processing and construction problems for nearly every refiner in the industry. Crude-oil capacity of existing refineries exceeds 5,100,000 bbl. per day, a rate of throughput which was attained for a brief period in the third quarter last year.

The low point of postwar domestic refinery operations will end this summer when the flow of new commercial and passenger automobiles reaches a level commensurate with demand. First quarter refinery throughput is expected to average about 4,276,000 bbl. daily and increase to approximately 4,403,000 bbl. per day during the last 9 months. By end of this year, the nation's refineries will be processing upwards of 4,500,000 bbl. daily, according to industry estimates currently available. Rates of operation, of course, are dependent on scores of unsettled conditions of industrial activity and employment. Labor conditions must be stabilized, petroleum industry observers agree, before postwar consumption reaches expected levels.

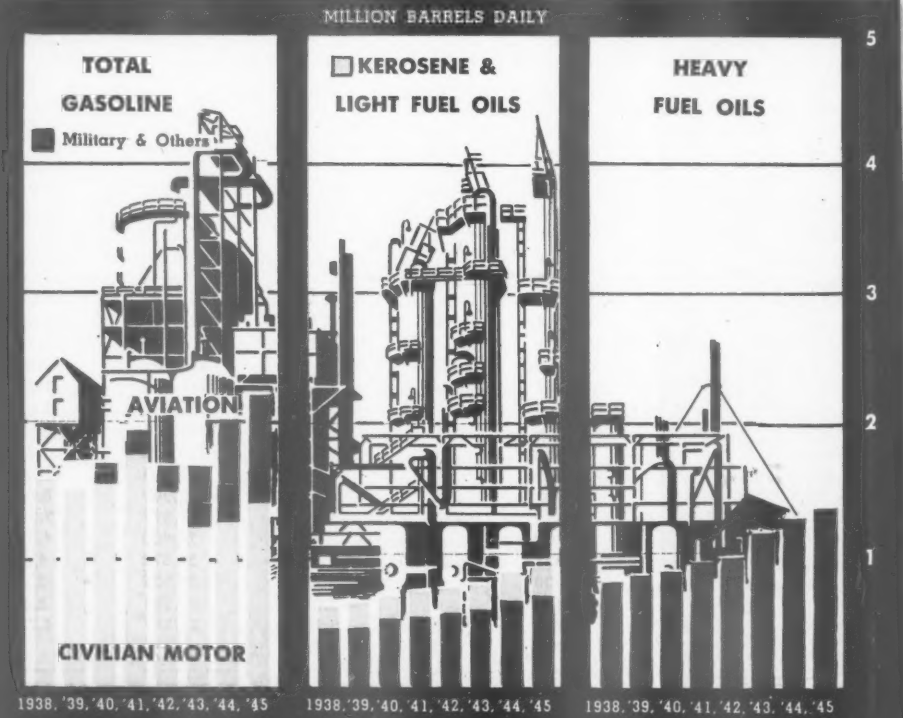
The pattern of refinery processing in the immediate future is confused. Recommendations have been made to Congress that companies operating government-owned plants during the war should be given all possible consideration as potential purchasers of surplus refinery facilities. This probably means that most of the catalytic-cracking units will continue in service and that such plants will be converted to manufacture of peacetime motor fuel and other products.

Catalytic reforming of thermally cracked naphthas is apparently receiving much favorable consideration from the hundreds of refiners throughout the country who were unable to equip their plants with the more advanced manufacturing processes during the war. Current thinking in the problem of meeting competition of higher-octane gasoline is trending toward a comparatively mild reforming operation. Product losses in the more severe application of reforming technique exceed all practicable levels, although the improvement in gasoline quality is substantial.

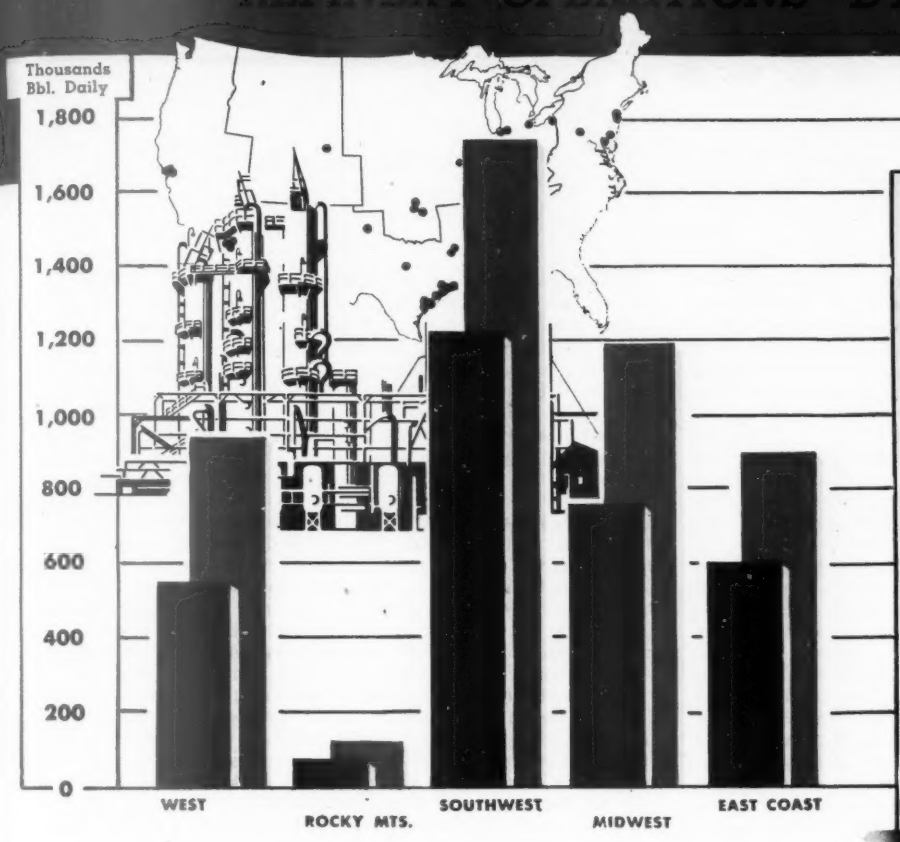
There appears to be little economic justification for

DOMESTIC REFINERY PRODUCTION

CIVILIAN MOTOR GASOLINE REDUCED — FUEL OILS INCREASED



REFINERY OPERATIONS—BY AREAS



CRUDE RUNS

DAILY AVERAGE

REGION	1938	1945
WEST COAST	549,000	931,000
ROCKY MTS.	68,000	119,000
SOUTHWEST	1,222,000	1,738,000
INLAND TEXAS	183,000	252,000
TEXAS GULF	844,000	1,155,000
LOUISIANA GULF	129,000	250,000
NO. LOUISIANA & ARKANSAS	66,000	81,000
MIDWEST	752,000	1,191,000
IND., ILL., KY.	447,000	800,000
OKLA., KAN., MO.	305,000	391,000
EAST COAST	602,000	897,000
SEABOARD	495,000	733,000
APPALACHIAN	107,000	164,000
TOTAL	3,195,000	4,876,500

continuing operation of the 19 government-built alkylation plants, chiefly because of the sharp decline in demand for fighting-grade aviation gasoline. Costs in operating alkylation plants, entirely justifiable under emergency conditions, cannot be supported in peacetime. Only those alkylation units linked with refineries continuing to supply the Army and Navy with fighting-grade aviation gasoline can be justified. Remainder of the alkylation-plant capacity will be retired from current service.

Butane isomerization units, 15 of which were financed by the government to increase the supply of isobutane for alkylation, are considered to have little immediate postwar value. The government-owned units have rated capacities of 8,825 bbl. daily of isobutane. A few companies with completely diversified market outlets and operating under the most favorable conditions will continue privately-built isomerization plants in peacetime service. The privately-owned plants have aggregate capacity of 25,000 to 26,000 bbl. of isobutane per day.

It is generally conceded that most of the wartime processes developed for the specific purpose of increasing productive capacity for aviation gasoline and translated into operating plants at a cost exceeding 1 billion dollars are too expensive for peacetime service. The immediate goal of refiners is to meet the surprisingly high demand for premium motor fuel in the range of 80-82 octane and keep within the economic limitations imposed by price ceilings on products, higher labor costs, and greater fixed expenditures in most phases of operation.

One of the most attractive mediums available for

DOMESTIC REFINERY OPERATIONS
(Thousands of barrels daily)

	Input			Output									
Prewar:	Crude oil	Other charge stock	Total	100 octane	Other aviation	Motor gasoline*	Total gasoline	Kerosene	Distillate, diesel fuels	Residual fuels	Lubes	Asphalt	Other and loss
Average 1941	3,861	140	4,001	23	35	1,790	1,848	199	518	938	109	124	265
War period:													
Average 1942	3,654	158	3,812	79	52	1,479	1,610	185	539	983	106	117	272
Average 1943	3,916	175	4,091	167	102	1,361	1,630	199	580	1,144	106	109	323
Average 1944	4,551	190	4,741	376	128	1,475	1,979	214	653	1,261	112	109	413
First quarter 1945	4,739	208	4,947	484	64	1,598	2,146	222	687	1,317	113	87	375
Second quarter 1945	4,892	209	5,101	509	61	1,595	2,165	209	708	1,327	123	120	451
Postwar:													
Third quarter 1945	4,774	210	4,984	330	31	1,826	2,187	219	683	1,267	119	138	371
Fourth quarter 1945†	4,530	192	4,722	5	28	1,967	2,000	236	687	1,202	103	112	382
First quarter 1946†	4,105	171	4,276	5	28	1,698	1,731	237	664	1,114	98	80	352
Second quarter 1946†	4,230	173	4,403	80	29	1,759	1,868	235	621	1,072	108	154	345
Second half 1946†	4,230	172	4,402	84	32	1,722	1,838	236	647	1,061	107	162	351

*Includes naphthas. †Estimated by PAW Program Division.

Refining

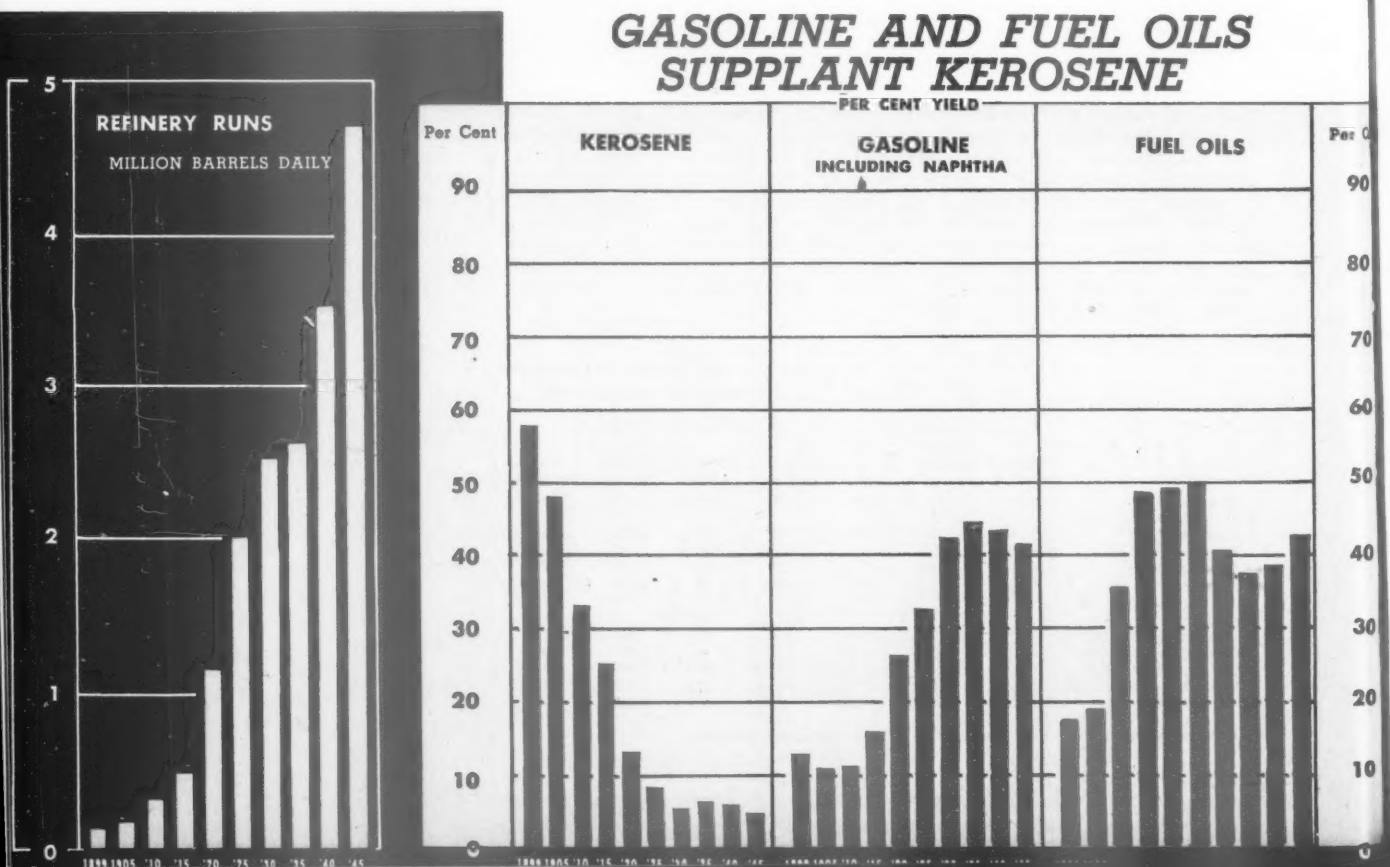
prompt and comparatively inexpensive improvement of motor-fuel quality is through essentially complete removal of sulfur from virgin naphthas and semifinished gasoline. Response of sulfur-free gasoline to tetraethyl lead is surprisingly superior. Consequently, many of the small refiners will be enabled to occupy relatively satisfactory competitive positions in the octane race by installation of desulfurization equipment for operation in conjunction with thermal cracking and polymerization facilities. One or two entirely new processes are under study by refinery engineering concerns which may enable small refiners to compete more favorably with the quality of products manufactured in the war plants.

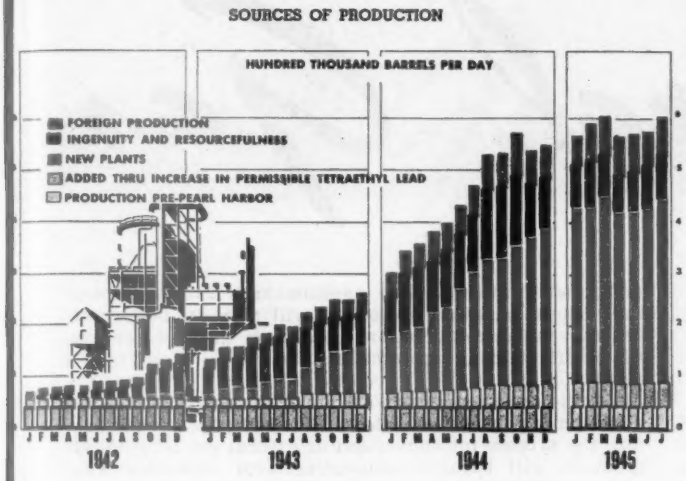
It is obvious from programs now under way or about ready to emerge from the planning stage that United States refiners will be forced to yield indeterminate percentages of their export markets over the next 5 years. Refinery construction, available information indicates, will be much greater in foreign countries—the Caribbean and Persian Gulf areas particularly—than in this country in the next few years. The foreign-refinery projects consist chiefly of expanding capacity in line with accelerated production and to meet certain nationalistic trends. Furthermore, the refinery capacity of western Europe, the Netherlands East Indies and other sections of the Far East must be rebuilt entirely with little usable equipment remaining from the ravages of war.

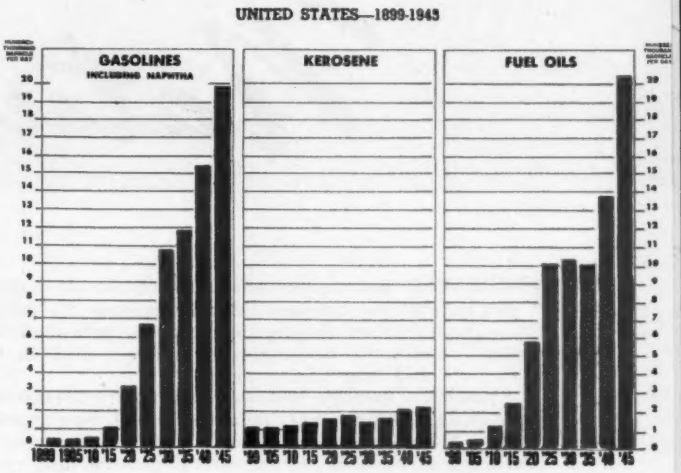
It is significant, however, that the trend in recent years in the domestic refining industry apparently will be continued. Primary-distillation and thermal-cracking capacity in this country is adequate for the next several years. But maintenance, replacement of exhausted equipment and modernization requirements will be heavier than ever before in the history of the industry. The desirability of adding specialty plants for production of the more complex hydrocarbons will increase immeasurably, according to most astute observers. Expanding markets are the first incentive focusing attention of refiners on market possibilities in the chemical field. Furthermore, the unit value of specialties is manyfold the current and potential selling price for volume products.

Charts accompanying this discussion show conclusively the trend to production of larger volumes of fuel oil. Inducements for return of prewar percentage relationships in petroleum-product manufacture will restore gasoline to its 1941 ratio probably within 2 years. Greater production of gasoline would be entirely possible with existing facilities but the industry would be compelled to store larger proportions of current production and at the same time resist pressure for greater volumes of fuel oil. Recent adjustments in the ceiling price on fuel oil were made for the specific purpose of maintaining domestic production of burning products at levels required for the comfort of residential consumers and for continued operation of industrial plants.

It was necessary during the war to expend vast sums of money in petroleum refining facilities in order to provide the aviation gasoline and other military products required. Only a limited amount of these expenditures was for the purpose of increasing the crude oil capacity







of refineries. Practically all the expenditures were for installations to make the necessary product quality. The effect of these expenditures was to enable the industry to meet military demands for aviation gasoline and other high-quality products, but most of the facilities so constructed have a postwar use and will undoubtedly exert a profound influence on the industry in the years ahead.

Wartime Expenditures

During the war years a total of $927,000,000 was expended on major projects in the refineries of the United States exclusive of the expenditures in refineries for the production of toluene for explosives and butadiene for synthetic rubber. Of this total amount, $864,000,000 was spent on facilities for the production of 100-octane aviation gasoline, $27,000,000 on facilities for the production of high-quality lubricating oils, and $36,000,000 for such miscellaneous projects as additional steam and power generating units, facilities for running "sour" crude, coking units, etc. Approximately $694,000,000 of the total, or 75 per cent, was expended by the industry for facilities owned and operated by the industry itself, and $233,000,000 was expended by the government for government-owned facilities which were leased and operated by the industry.

All the expenditures for lubricating oil facilities and for miscellaneous facilities were for privately owned and operated installations. Of the $864,000,000 spent for 100-octane facilities, $631,000,000 or 73 per cent was for privately owned and operated facilities, and $233,000,000 or 27 per cent was for government-owned and industry-operated facilities. Most of the government-financed facilities were installed at refineries belonging to smaller companies having limited financial resources, thus aiding those companies to participate in the program instead of concentrating it all in the hands of the larger companies. The government encouraged the private investment in new refining facilities through loans and accelerated tax amortization certificates, both of which were effective in enabling industry to make the necessary investments.

Of the facilities installed for the production of aviation gasoline, the installation of catalytic cracking units accounted for the biggest part of the cost. Next came the installation of alkylation facilities and, third, such miscellaneous units as butane isomerization units, fractionating units, etc.

The art of catalytic cracking on a commercial basis was developed prior to the war but on a very limited scale. Today, due to the war, there are in this country catalytic cracking units having a total charging capacity of over 1,000,000 bbl. a day. Nearly all these units were built to produce high-quality base stocks and feed stocks for alkylation units for ultimate use in 100-octane aviation gasoline. These same units, however, can be used for the production of high-quality motor gasoline, and it is a reasonable assumption that most of them will be so used.

Alkylation-Unit Situation Different

The situation in regard to alkylation units is quite different. In alkylation units, isobutane is combined chemically with butylene to produce alkylate which is fundamentally the iso-octane originally used as the ultimate in the octane number scale. Alkylate in general is a relatively expensive commodity to produce, and only in rare cases is it economically feasible to include it in such a low-price product as motor gasoline. Therefore, it is a reasonable assumption that many of the alkylation units constructed during the war will have little if any postwar value.

Of the third or miscellaneous group of units, a portion of them probably will continue to be used, but such facilities as butane isomerization units have little indicated postwar value.

Natural Gas

INCREASED production and consumption of natural gas, natural gasoline and cycle condensate are among the war-stimulated developments in the petroleum industry which will be continued and extended in the immediate and long-term future.

Production through 1945 averaged nearly 304,000 bbl. per day and consumption, including benzol, was approximately 313,000 bbl. daily. Most significant increases in consumption were in use of natural gasoline and cycle condensate at refineries, in direct sales to jobbers and as LPG for fuel and chemical manufacture.

Assurance that the trend to greater production and consumption will continue in the postwar years is the result of current operating practices in the industry and in policies of government agencies which are clamoring for application of the most advanced conservation techniques.

Probably the most logical point of expansion in consumption of natural-gasoline and cycle-plant products is in the manufacture of synthetic chemicals and plastics. Oxidation and cracking processes using propane, butanes and natural gas have led to the construction of several large chemical plants for the manufacture of alcohols, plastics, nylon, detergents, solvents, and numerous other chemicals. This particular field is expected to expand significantly in the next few years and will afford market outlets for constantly increasing volumes of the raw material.

Bulk of the production of natural gas and natural gasoline, however, will continue in the satiation of demand for residential and industrial fuel and in the manufacture of gasoline. Refiners, it has been proven since end of the war, will continue to use about 60 per cent of the nation's production of natural gasoline and cycle stock. Sales direct to jobbers has increased from approximately 2 or 3 per cent of the prewar supply to a current level of about 7 per cent and outlet through this channel is continuing to grow.

Wartime construction of natural-gasoline and cycling plants featured installation of the most advanced fractionation facilities. Most of the newer plants and several of the prewar installations, therefore, are currently equipped to recover substantially all propane and butane and to manufacture naphtha and finished motor fuel. These facilities, of course, will play an important function in future operations because of the more versatile manufacturing procedures available to plant operators.

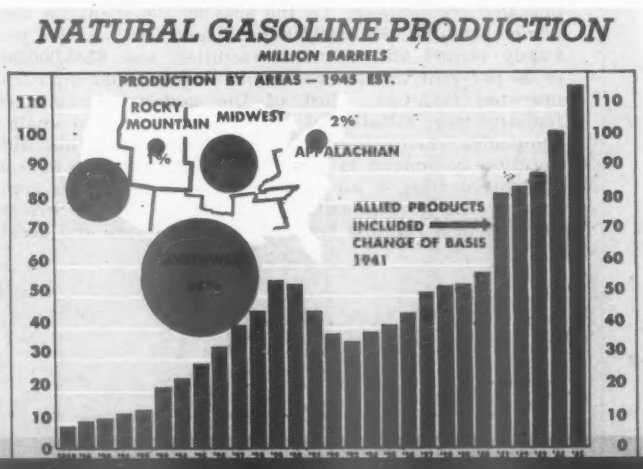
Much work remains to be done in experimental and development phases of Fischer-Tropsch operations before the process for conversion of natural gas into liquid products will become competitive with refineries. Petroleum markets based on a posted price for crude oil of $2 to $2.50 will be necessary before Fischer-Tropsch plants operating on natural gas could be considered economically attractive. Later developments, of course, may revise the economics in Fischer-Tropsch operations, reducing costs and narrowing the current margin between liquid products derived from crude oil and natural gas.

A majority of the country's natural-gas reserves, as indicated by the accompanying charts, are located in the southwestern states. In meeting the demand for larger volumes of natural gas in the northern and eastern states, it is obvious that extensive new pipe-line facilities will be required. Furthermore, California's natural-gas reserves are diminishing and new discoveries in recent years have been discouraging.

Major Transmission Lines Under Consideration

Major transmission lines are now under consideration from West Texas and the Panhandle to California; from Hugoton in western Kansas and Oklahoma to Detroit and vicinity; from Southwest Texas and the Gulf Coast to the Appalachian area. There remains the possibility that the War Emergency Pipelines, Inc. Big-Inch systems, originating on the Gulf Coast and in East Texas, may be converted to natural-gas service for transmission of large volumes to the East Coast. Final disposition of the WEP lines remains to be determined and their use as natural-gas transmission lines faces stiff opposition from railroad and coal interests in the eastern states.

There can be no doubt, informed observers assert, that substantial growth will develop in the near future in operation of cycling plants and related forms of pres-



and Gasoline . . .

sure-maintenance techniques. Economics of the deeper, more expensive development drilling required in exploitation of many of the newer reservoirs necessitate employment of all modern producing techniques. Maximum recovery of all reservoir products, dictated by advanced thinking in conservation practices and by cost considerations, requires consideration of cycling and other pressure-maintenance techniques in the early stages of development.

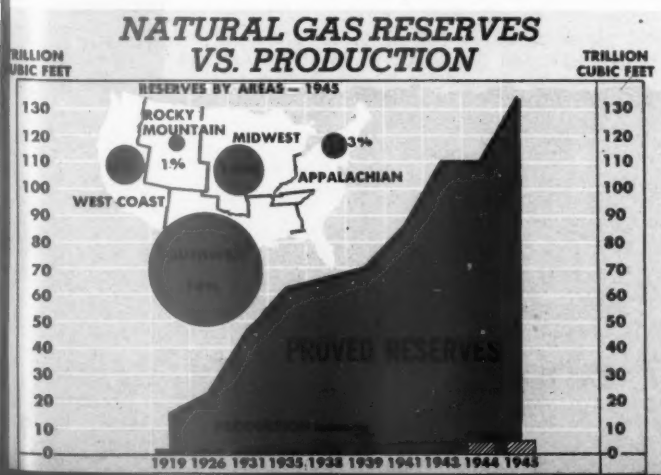
It has been reported that approximately 50 per cent of the additional synthetic ammonia produced during the war for explosives was made with hydrogen derived from natural gas. The use of hydrogen and carbon monoxide from natural gas has endless possibilities in the manufacture of a wide range of chemicals.

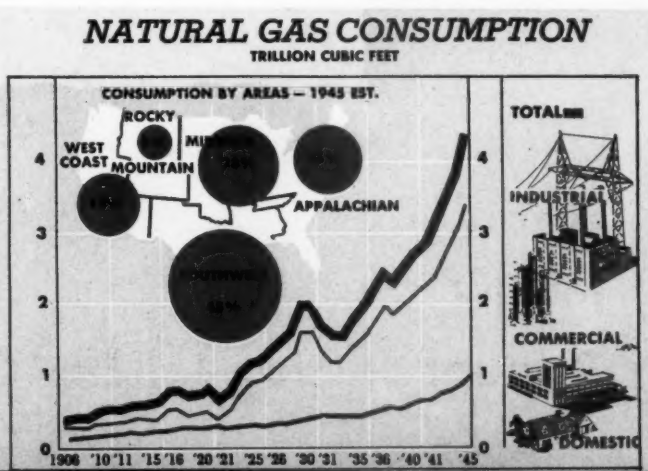
The production of carbon black, of fundamental importance to the rubber and the printing and paint industries, has long utilized about 10 per cent of this country's annual production of natural gas, and was expanded enormously during the war.

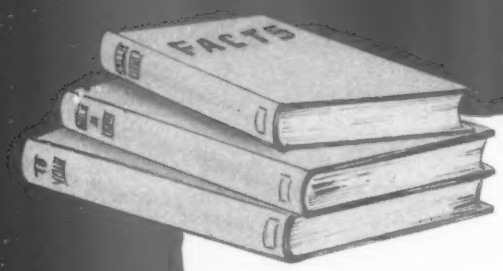
PRODUCTION OF NATURAL GASOLINE AND ALLIED PRODUCTS
(Thousands of gallons)

1945—	Natural gasoline	Nat. gasoline mixture	Raw condensate	Finished gasoline L.P.G.	Finished gasoline and naphtha	Other products	Total
January	177,932	28,015	42,513	133,316	18,552	3,014	403,342
February	161,409	26,690	35,632	122,919	17,824	3,158	367,632
March	178,682	30,119	38,519	129,947	19,265	3,432	399,964
April	177,082	29,736	35,661	124,407	18,870	3,076	388,832
May	187,851	32,935	36,563	127,799	19,423	3,124	407,695
June	183,309	32,320	34,113	115,632	21,181	3,231	389,786
July	188,623	33,645	34,308	118,013	22,185	2,943	399,717
August	190,019	34,747	32,429	115,479	20,103	2,470	395,247
September	180,228	29,583	23,045	95,718	19,374	1,879	349,827
October	185,444	26,636	33,171	109,100	22,431	2,361	379,143
Ten months total	1,810,579	304,426	345,954	1,192,330	199,208	28,688	3,881,185

1944—	Nat. gasoline	Cycle products	L.P.G.	Benzol	Total
January	171,318	63,378	110,250	8,400	353,346
February	166,068	57,078	110,124	8,400	341,670
March	179,004	61,194	110,208	8,400	358,806
April	177,450	59,346	105,714	8,400	350,910
May	186,186	72,870	100,800	8,400	368,256
June	182,658	75,180	96,096	8,400	362,334
July	191,814	77,322	103,782	8,400	381,318
August	191,940	76,944	106,008	8,400	383,292
September	186,438	70,518	113,568	8,400	378,924
October	191,898	76,104	122,766	8,400	399,168
November	182,448	73,752	133,980	8,400	398,580
December	181,062	79,338	117,474	....	377,874
Total	2,188,284	843,024	1,330,770	92,400	4,454,478







Conclusion . . .

FOR another and possibly the last time, the war with its related events continued to be the overshadowing influence in all phases of the petroleum industry during the year 1945.

In this Annual Issue, The Oil and Gas Journal offers its readers detailed statistical information which bears out this as well as other less-important trends. In this section will be found comparative data on production, refining, wildcatting, and other industry activities, presented in charts, maps, tables, and graphs in addition to explanatory text.

To the world at large 1945 brought such history-making events as peace in Europe and the Pacific, the atomic bomb, and United Nations Organization. For the petroleum world, it was featured by a new high domestic crude production of 1,711,000,000 bbl., a sharp increase in wildcat drilling, and a greater average depth of wells.

Oil men of the nation, in spite of wartime obstacles, produced as never before to meet the stupendous demands of the final year of global war. Drillers recorded a total 98,243,000 ft. of hole, greatest since 1941, in drilling 26,879 wells. Exploration was extensive, though the results in the form of newly discovered reserves were unimpressive. In its record-breaking year, production reached a peak of 5,000,000 daily in August and, showing the reconversion pattern, leveled off to about 4,500,000 bbl. daily.

NEW RESERVES

Discoveries, New Pays, and Extensions In 1945, Their Size, and Where Located

MORE than 400 new oil pools were discovered during 1945 which with more than 100 successful oil-field extensions proved approximately 70,500 acres productive of petroleum. The Journal's statistical tabulation indicates that 337 new oil reservoirs were discovered and there were 81 new pools proven by development of production from new oil pays in previously productive fields. New pays, according to the classification system tentatively approved by scientific societies, qualify as new pools and are treated, therefore, as discoveries.

The wildcat exploration program last year, most active in history, also accounted for discovery of 94 new gas reservoirs. Six new pays were discovered in older fields and extensions were registered to 16.

Texas, with 138 new oil discoveries, and 40 new pays in older fields, topped all states in exploration activity. The 178 new oil field and new pay discoveries combined with 55 extensions to old fields to prove nearly 30,000 acres productive. All classes of new discoveries and extensions added approximately 31,876,000 bbl. of new petroleum reserves for the state.

A bulk of the newly proven acreage, 17,000 acres, occurred in West Texas with North and West Central, Upper Gulf Coast, and Lower Gulf Coast closely following.

Texas also dominated remainder of the country in the discovery of new natural-gas reserves. Out of the 94 virgin gas fields discovered last year 36 were in Texas. These discoveries with development of three new gas pays in older fields and one extension to previously proven territory added 31,876 acres of proven territory.

The important Rangely field in Colorado was chiefly responsible for expansion of proven oil land in that state by 12,800 acres during the year. Thus, Colorado ranked second to Texas from the standpoint of proven productive acreage added during the year.

Kansas is credited with 34 new oil discoveries and 1 new pay but they were relatively small, proving only 2,130 acres of new territory. Of course, many discoveries in Kansas as well as in other states may require many months to reflect their true significance.

Louisiana with 14 new oil discoveries in the southern part of the state and 5 in the northern sector accounted for new reserves of 10,320,000 bbl. The exploration program of 1945 proved 2,480 acres in the southern area and 980 acres in the northern part of the state for a total of 3,460 acres.

Illinois was the third most active state in discovery of new fields, yielding a total of 27 for the year which proved 3,600 productive acres and 10,300,000 bbl. of estimated new reserves.

This year, as previously, the Journal's estimate of proven acreage and reserves for new discoveries is confined to the physical facts as supported by actual development. No attempt has been made to speculate on the probable future development which may substantially alter the conditions existing at start of this year.

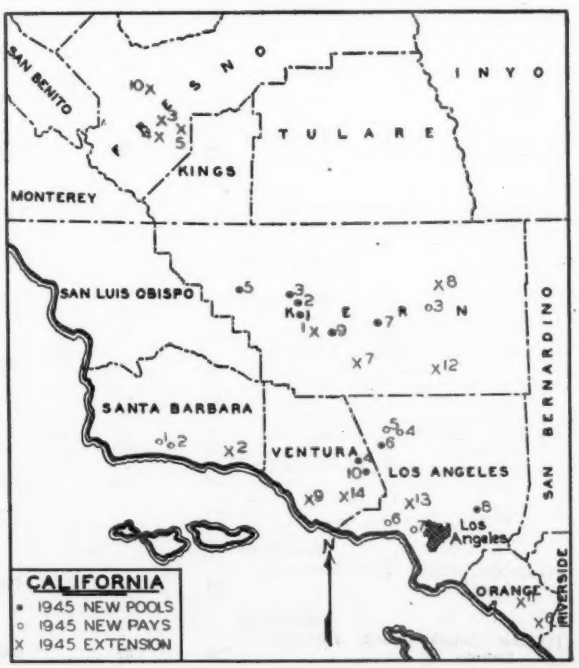
CALIFORNIA

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Cymric - McKittrick, Kern; Anderson, Miocene	100	30	2,500
(2) Cymric - McKittrick, Kern; Oceanic, Miocene	50	50	1,000
(3) Cymric - McKittrick, Kern; Cymric, Miocene	20	54	200
(4) Hasley Canyon, Ventura; Sespe, Miocene	10	121	1
(5) McDonald Anticline, Kern; Temblor, Miocene	40	48	4
(6) Ramona, Los Angeles, Kern; Miocene	80	93	250
(7) Rosedale, Kern; Chanac, Pliocene	100	29	500
(8) Sansinena, Los Angeles; Puente, Miocene	80	249	400
(9) Santiago, Kern; Leutholtz, Miocene	100	218	2,500
(10) Simi, Los Angeles; Sespe, Miocene	10	339	1
Total	590		7,356

New Pays

(1) Capitan, Santa Barbara; Sespe, Miocene	50	25	2,000
(2) Capitan, Santa Barbara; Covarrubias, Eocene	50	84	2,500
(3) Edison, Kern; Schist, basement complex	1,000	100	15,000



CALIFORNIA (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(4) Newhall, Potrero, Los Angeles; sixth zone, Miocene	160	77	5,000
(5) San Martinez, Los Angeles; Vasquez 13, Pliocene-Miocene contact	100	200	1,500
(6) Wilmington, Los Angeles; 237 sand, Miocene	80	150	10,000
(7) Wilmington, Los Angeles; Schist-Conglomerate, basement	80	121	5,000
Total	1,520		41,000
Extensions			
(1) Elk Hills, Kern; Scalez, Pliocene	500	125	25,000
(2) Elwood, Santa Barbara; Vaqueros, Miocene	50	150	250
(3) Helm, Fresno; various, Miocene	100	75	5,000
(4) Jacalitos, Fresno; Temblor, Miocene	100	50	1,500
(5) Lanare, Fresno; various, Miocene	80	70	1,200
(6) Newport, Orange, Newport; Miocene	500	50	5,000
(7) Paloma, Kern, Paloma; Miocene	180	250	1,800
(8) Race Track, Kern, Portals; Miocene	180	150	1,750
(9) Rincon, Ventura, Rincon; Pliocene	100	100	1,000
(10) Riverdale, Fresno; various, Miocene	120	75	1,750
(11) Seal Beach, Orange; McGrath	80	250	5,000
(12) Tejon, Kern, Tejon; Pliocene	120	100	750
(13) Torrance, Los Angeles; Ranger, Pliocene	125	225	2,500
(14) Ventura Avenue, Ventura; various, Pliocene	....	300	5,000
Total	2,235		57,500

ROCKY MOUNTAIN AREA

COLORADO

Extensions			
(1) Rangely, Rio Blanco; Weber	12,800	250	153,6000

MONTANA

Discoveries			
(1) Brady, Pondera; Sunburst	120	35	120
(2) Devon, Toole; Ellis-Madison Contact	120	1	120
(3) East High Gravity, Toole; Ellis-Madison	40	2	80
(4) North Cut Bank, Glacier; Madison	40	3	200
(5) Utopia, Liberty; Madison	40	20	40
Total	360		560
New Pays			
(1) Cat Creek, Petroleum; Ellis	240	20	1,100
Extensions			
(1) Pondera, Pondera; Ellis-Madison	80	4	80

WYOMING

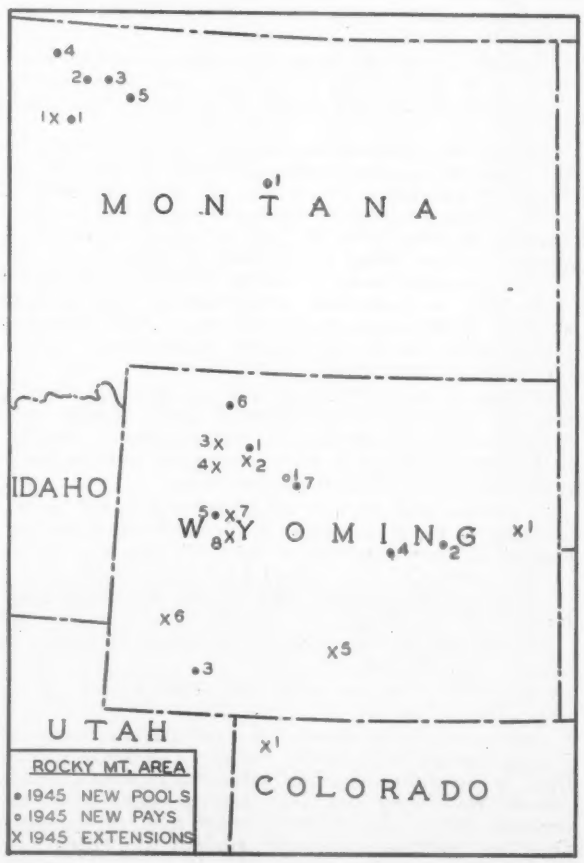
Discoveries			
(1) Lamb, Big Horn; Tensleep	40	20	320
(2) Midway, Natrona; Dakota	40	10	40
(3) North Baxter Basin, Sweetwater; Entrada	40	34	120
(4) Oil Mountain, Natrona; Tensleep	40	44	120
(5) Sheldon, Fremont; Embar	40	15	600
(6) South Elk Basin, Park; Tensleep	40	188	400
(7) Zimmerman Butte, Hot Springs; Embar	40	22	320
Total	280		1,920
New Pays			
(1) Golden Eagle, Hot Springs; Dakota	80	37	400
Extensions			
(1) East Lance Creek, Niobrara; Dakota	120	35	600

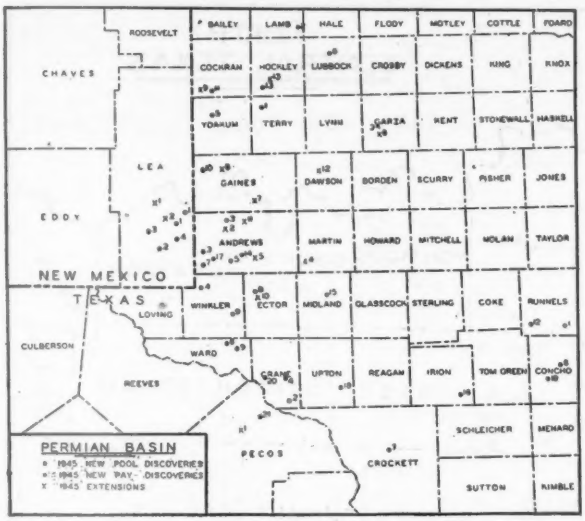
WYOMING (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(2) Grass Creek, Hot Springs; Embar	80	60	240
(3) Half Moon, Park; Tensleep	160	83	800
(4) Little Buffalo Basin, Park; Tensleep	80	60	800
(5) Lost Soldier, Sweetwater; Tensleep	200	147	1,600
(6) North La Barge, Sublette; Tertiary	40	(?)	80
(7) Steamboat Butte, Fremont, Tensleep	160	100	2,400
(8) Winkelman, Fremont; Tensleep	40	230	400
Total	880		6,920

SOUTHEAST NEW MEXICO

Discoveries			
(1) Paddock, Lea; Glorietta	520	30	4,160
Paddock, Lea; Yeso	40	45	200
(2) Young, Lea; Queen	40	40	200
(3) Unnamed, Lea; San Andres	40	291	160
(4) Unnamed, Lea; Grayburg	40	91	200
Total	680		4,920
New Pays			
(1) Penrose-Skelly, Lea; Ellenburger	40	70	320
Glorietta	40	44	120
Total	80		440
Extensions			
(1) Caprock, Lea; Queen	20	14	10
(2) Drinkard-Yeso, Lea; Wichita-Albany, Yeso	600	120	3,000
Total	620		3,010





WEST TEXAS

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Alexander, Terry; San Andres	160	69	640
(2) Anton, Lamb; Wichita	160	15	480
(3) Bedford - Devonian, Andrews; Devonian	80	373	800
Bedford-Ellenburger, Andrews; Ellenburger	80	302	800
(4) Block 31, Crane; Devonian	80	32	480
Ellenburger	80	167	480
(5) Brahaney, Yoakum; San Andres	40	29	120
(6) Cravens, Lubbock; Wichita	40	120	120
(7) Dollar Hide, Andrews; Devonian	80	60	400
(8) Eden, Concho; Marble Falls	40	8	160
(9) Edwards, Ward; Holt	40	177	120
(10) Jones Ranch, Gaines; Devonian	80	145	400
(11) Landon, Cochran; San Andres	40	55	160
(12) Leonard, Runnels; Cross Cut	80	15	200
(13) Levelland, Hockley; San Andres	200	60	400
(14) Martin, Andrews; Clear Fork	120	186	360
(15) Midland, Midland; Strawn	80	16	320
(16) Tankersley, Irion; Strawn	40	5	100
(17) Three Bar, Andrews; Devonian	80	50	320
(18) Upland, Upton; Pennsylvanian	80	450	....
(19) Unnamed, Concho; Pennsylvanian	40	9	80
(20) Unnamed, Crane; Waddell	40	20	....
(21) Unnamed, Pecos; Yates	40	19	60
Total	1,800		7,000

New Pays

(1) Beddo, Runnels; Palo Pinto	40	12	160
(2) Crossett, Crane; Holt	300	30	1,800
(3) Fullerton, Andrews; San Andres, Ellenburger	40	17	200
	320	290	4,800
(4) Keystone, Winkler; Silurian	80	134	160
(5) Martin, Andrews; McKee	80	50	800
(6) Monahans, Ward; Holt	40	290	200
(7) Todd Deep, Crockett; Ellenburger	1,600	86	12,800
(8) TXL, Ector; Ellenburger	500	147	7,500
(9) Wheeler - Ellenburger, Winkler; Devonian	80	40	480
Total	3,080		28,900

Extensions

(1) Fort Stockton, Pecos; Yates	800	147	4,000
(2) Fullerton, Andrews; Devonian	1,000	80	8,000
(3) Garza, Garza; San Andres	....	100	.....
(4)Mabee, Martin; San Andres	1,500	50	7,500
(5) Mascho - Fuhrman, Andrews; San Andres, Grayburg	500	302	3,000
(6) PHD, Garza; San Andres	200	36	800
(7) Robertson, Gaines; Glorietta	80	68	480
(8) Russell, Gaines; Clear Fork	300	402	1,200
(9) Slaughter, Cochran; San Andres	3,000	50	12,000
(10) TXL-Devonian, Ector; Devonian	4,000	89	48,000

WEST TEXAS (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(11) Union-Deep, Andrews; Tubb	500	110	4,000
(12) Welch, Dawson; San Andres	200	94	1,000
(13) Yellowhouse, Hockley; San Andres	40	22	100
Total	12,120		80,080

ARKANSAS

Discoveries

(1) Wesson, Ouachita; Glen Rose	80	32	400

New Pays

(1) Strong, Union; Cotton Valley	40	5	100

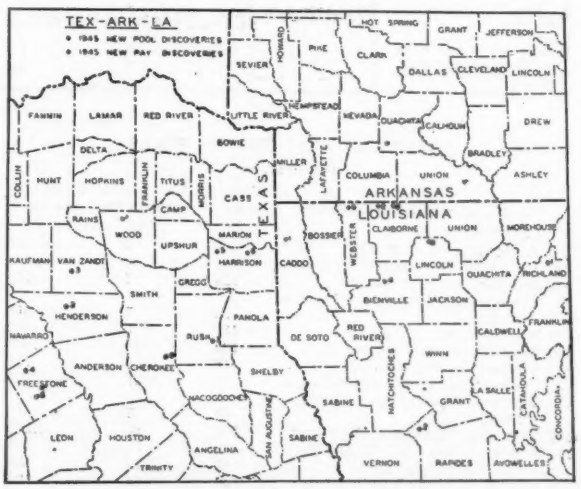
NORTH LOUISIANA

Discoveries

(1) Big Creek, Richland; Tuscaloosa	500	10	2,500
(2) Flatwoods, Rapides, Wilcox	40	6	50
(3) Knowles, Lincoln; Cotton Valley	40	50	100
(4) Sailes, Bienville	40	47	100
(5) Shongaloo, North, Webster; Pettit	40	11	50
Total	660		2,800

New Pays

(1) Blanchard, Longwood; Caddo	40	5	50
(2) Haynesville, Claiborne, Bodcaw	240	24	1,440
(3) Haynesville, East, Claiborne, Lower Sligo	40	9	50
Total	320		1,540



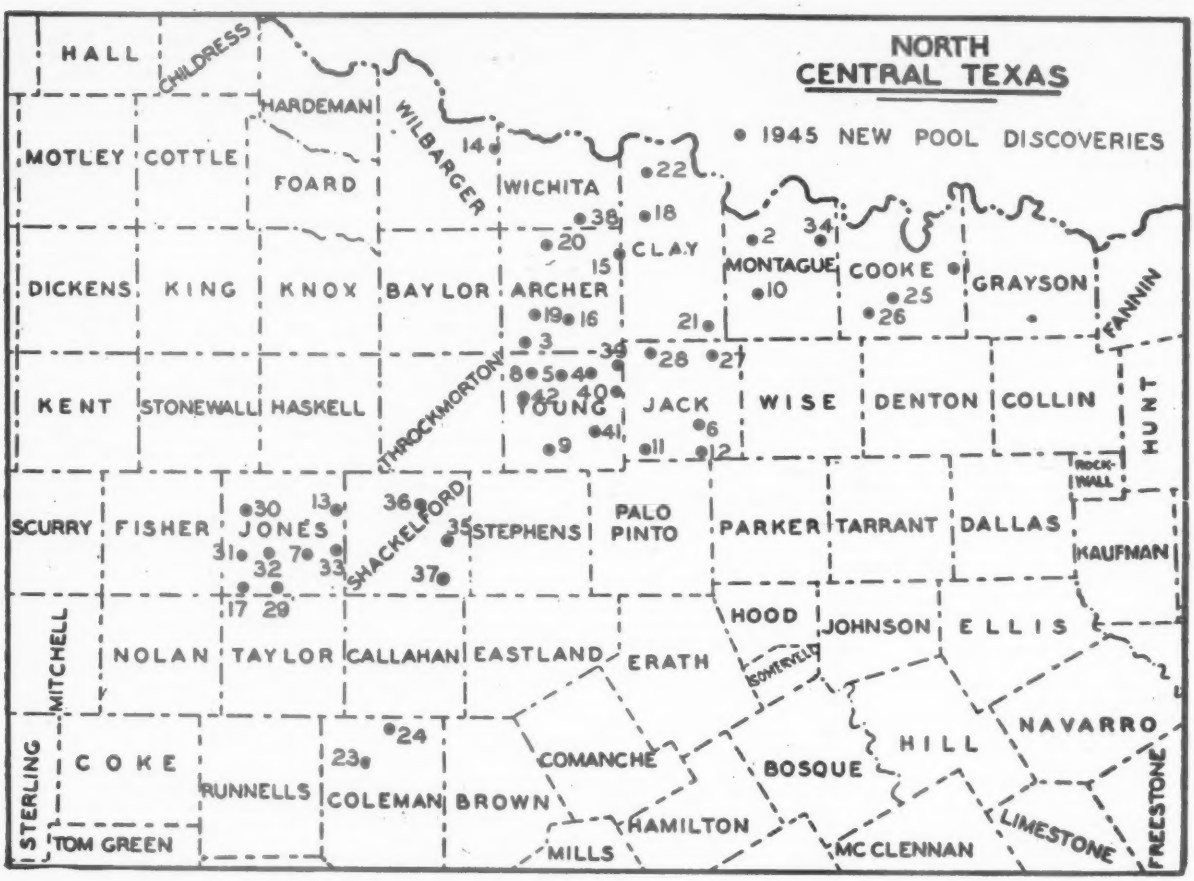
EAST TEXAS

New Pools

(1) Fairfield, Freestone; Travis Peak	80	37	160
(2) Larue, Henderson; Bacon	40	12	100
(3) Myrtle Springs, Van Zandt; Travis Peak	40	20	100
(4) Teague, Freestone; Pettit	40	50	80
(5) Whelan, Harrison; Rodessa	40	18	100
(6) Unnamed, Harrison; Pettit	40	16	40
(7) Unnamed, Rusk; Travis Peak	40	7	100
(8) Unnamed, Van Zandt; Rodessa	40	7	40
Total	360		720

New Pays

(1) Coke, Wood; Young	80	50	160
(2) Fairfield, Freestone; Woodbine	20	9	20
(3) Lone Star, Cherokee; Nacatoch	40	36	200
Total	140		380



NORTH AND WEST CENTRAL TEXAS

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Almon, Cooke; Strawn	160	9	480
(2) Belcherville, Montague; Caddo	240	10	1,200
(3) Benson, Archer; Caddo	120	7	360
(4) Bravousett, Young; Mississippian	80	7	400
(5) Bryan, Young; Caddo	120	8	360
(6) Cherryhomes, Jack; Strawn	120	15	400
(7) Cooper, Jones; Swastika	40	7	120
(8) Crain, Young; Mississippian	40	17	100
(9) Graham-Tankersley, Young, Strawn	40	28	40
(10) Johnson, Montague; Bend	240	22	1,200
(11) Kinder, Jack; Mississippian	120	22	240
(12) McAnally, Jack; Bend	40	16	80
(13) Martin, Jones; Bluff Creek	80	11	100
(14) National, Wilbarger; Ellenburger	240	16	1,200
(15) Nichols, Archer; Ellenburger	120	57	400
(16) Richardson, Archer; Caddo	80	8	240
(17) Swann, Jones; Saddle Creek	40	11	100
(18) Wood, Clay; Caddo	200	5	500
(19) Unnamed, Archer; Cisco	40	7	10
(20) Unnamed, Archer	40	17	10
(21) Unnamed, Clay; Strawn	40	20	10
(22) Unnamed, Clay; Caddo	40	30	10
(23) Unnamed, Coleman; Gray	40	20	40
(24) Unnamed, Coleman; Jennings	40	25	10
(25) Unnamed, Cooke; Strawn	40	6	20
(26) Unnamed, Cooke; Strawn	120	5	60
(27) Unnamed, Jack; Simpson	40	140	100
(28) Unnamed, Jack; Caddo	40	9	20
(29) Unnamed, Jones; Gunsight	40	4	100
(30) Unnamed, Jones; King	40	7	20
(31) Unnamed, Jones; Canyon	40	11	80
(32) Unnamed, Jones; Noodle Creek	40	10	20
(33) Unnamed, Jones; Flippen	40	11	10
(34) Unnamed, Montague; Strawn	40	2	40
(35) Unnamed, Shackelford; Fry	40	21	10
(36) Unnamed, Shackelford; Cook	40	5	20
(37) Unnamed, Shackelford; Strawn	40	7	60

NORTH AND WEST CENTRAL TEXAS (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(38) Unnamed, Wichita; KMA	40	60	30
(39) Unnamed, Young; Strawn	80	15	160
(40) Unnamed, Young; Strawn	40	15	60
(41) Unnamed, Young; Strawn	40	15	20
(42) Unnamed, Young; Cisco	80	10	10
Total	3,240		8,460

MICHIGAN

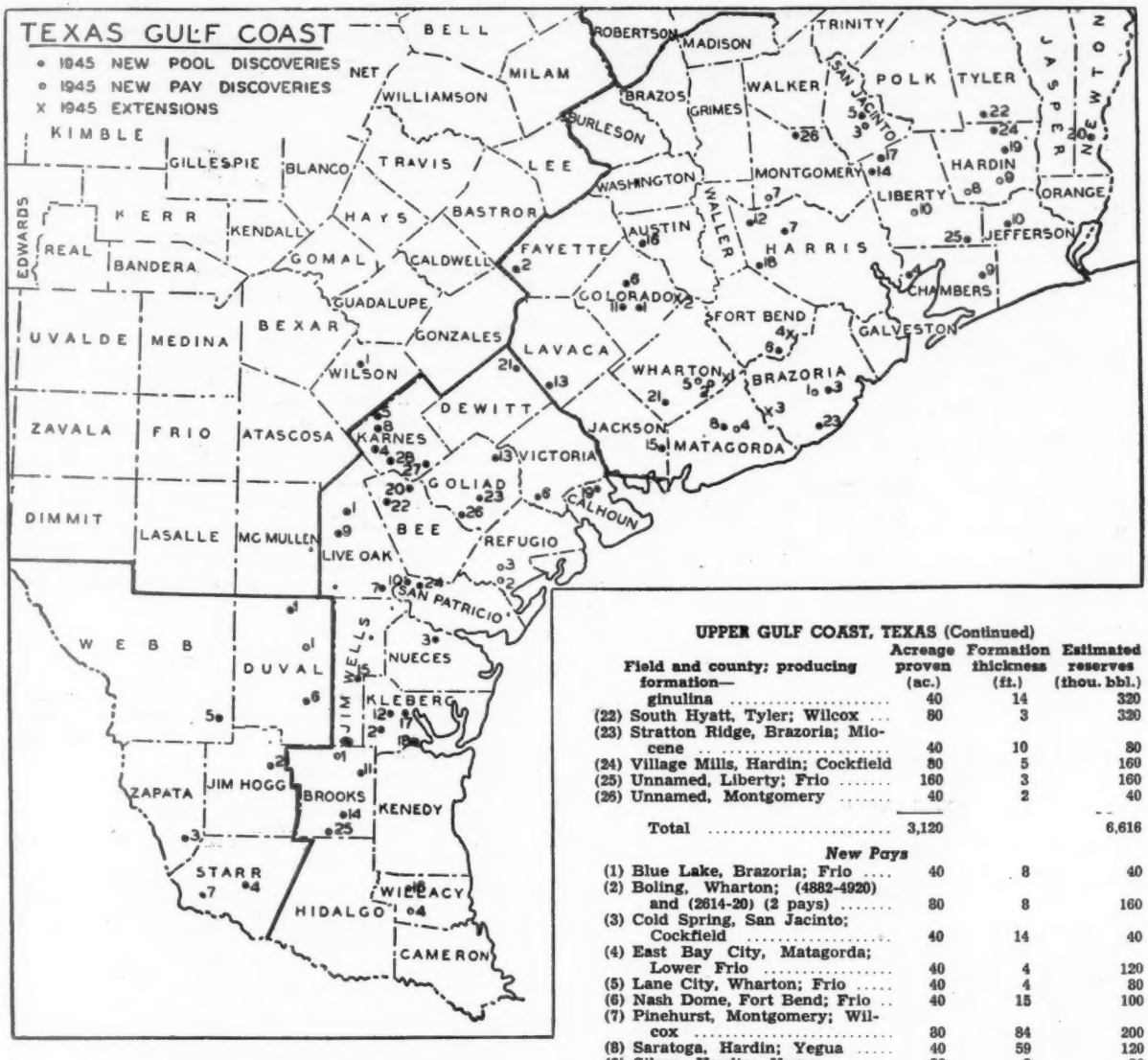
Discoveries

Ashton, Osceola; Traverse	60	3	100
Douglas, Montcalm; Dundee	80	6	200
Harrison, Clare; Dundee	80	2	120
Rockford, Kent; Traverse	120	9	240
Otisville, Genesee; Berea	20	17	20
Miscellaneous	....	...	100
Total	360		780

OHIO

Extensions

Ashland - Lorain - Medina; Berea, Oriskany, Clinton	425	18	194
Brush Creek-Zanesville, Muskingum, Morgan; Clinton, Medina	1,435	10	545
Cambridge, Guernsey, Washington, etc.; Berea, Oriskany	297	12	110
Clayton, Perry; Clinton	239	40	206
Lancaster, Fairfield, Perry, etc.; Berea, Clinton	476	28	306
Mount Vernon, Knox, Licking; Berea, Clinton	408	18	259
Sandyville, Tuscarawas, Stark; Clinton	80	30	50
Stewart, Athens, Morgan, Meigs; Shallow, Berea	372	12	198
Total	3,652		1,818



UPPER GULF COAST, TEXAS

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Altair, Colorado; Wilcox	480	12	1,200
(2) Arnim, Fayette; Wilcox	160	20	320
(3) Blue Lake, Brazoria; Frio	320	12	320
(4) Cedar Bayou, Chambers; Frio	80	2	160
(5) Cold Spring, San Jacinto; Wilcox	80	32	240
(6) Columbus, Colorado; Wilcox	40	2	80
(7) Cypress, Harris; Cockfield	160	10	400
(8) East Bay City, Matagorda; Lower Frio	160	28	480
(9) Elm Bayou, Chambers; Upper Frio	160	21	96
(10) Gilbert Ranch, Jefferson; Frio	160	15	400
(11) Hamel, Colorado; Wilcox	40	17	240
(12) Hockley, Harris; Yegua	40	10	160
(13) Hope, Lavaca; Wilcox	40	50	80
(14) Kirby-Shallow, Liberty; Miocene	40	7	40
(15) Moody Ranch, Jackson; Basal Frio	320	8	480
(16) New Ulm, Austin; Wilcox	40	10	160
(17) North Cleveland, Liberty; Cockfield	40	2	120
(18) North Delhi, Harris	160	8	160
(19) Olive, Hardin; Wilcox	80	95	320
(20) Sabine Tram, Newton; Cockfield	80	6	80
(21) South Hillje, Wharton; Marginulina	40	14	320
(22) South Hyatt, Tyler; Wilcox	80	3	320
(23) Stratton Ridge, Brazoria; Miocene	40	10	80
(24) Village Mills, Hardin; Cockfield	80	5	160
(25) Unnamed, Liberty; Frio	160	3	160
(26) Unnamed, Montgomery	40	2	40
Total	3,120		6,616

New Pays

(1) Blue Lake, Brazoria; Frio	40	8	40
(2) Boling, Wharton; (4882-4920) and (2614-20) (2 pays)	80	8	160
(3) Cold Spring, San Jacinto; Cockfield	40	14	40
(4) East Bay City, Matagorda; Lower Frio	40	4	120
(5) Lane City, Wharton; Frio	40	4	80
(6) Nash Dome, Fort Bend; Frio	40	15	100
(7) Pinehurst, Montgomery; Wilcox	80	84	200
(8) Saratoga, Hardin; Yegua	40	59	120
(9) Silsee, Hardin; Yegua	80	8	80
(10) South Liberty, Liberty; Frio	40	18	40
Total	520		980

Extensions

(1) Boling, Wharton, Marginulina	40	20	80
(2) Chesterville, Colorado; Yegua	160	12	160
(3) Old Ocean, Brazoria; Frio	80	20	160
(4) Thompson, Fort Bend; (5412-20)	40	8	100
Total	320		500

LOWER GULF COAST, TEXAS

Discoveries

(1) Albert West, Live Oak; Wilcox	40	2	80
(2) Borregas, Kleberg; (6889-95)	40	6	40
(3) Cheeves, Nueces; Frio	160	14	160
(4) Coy City, Karnes; Wilcox	120	5	120
(5) Falls City, Karnes	520	3	520
(6) Gaffney, Victoria; Frio	80	4	240
(7) Hinnant, Live Oak; Cockfield	80	8	320
(8) Hysaw, Karnes; Carrizo-Wilcox	160	3	800
(9) Kittie West; Live Oak; Wilcox	160	6	160
(10) Maedgen, San Patricio; Frio	40	14	40
(11) Mariposa, Brooks; Vicksburg	80	8	400
(12) Monte Negra, Kleberg; (7065-73)	80	8	160
(13) North Fannin, Goliad; Vicksburg	40	15	40
(14) Rachal, Brooks	160	12	160
(15) Ramon, Jim Wells; Frio	80	6	200
(16) Raymondville, Willacy; Miocene	120	2	240
(17) Ricardo, Kleberg; Frio	160	2	640

LOWER GULF COAST, TEXAS (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(18) Riviera, Kleberg	160	20	160
(19) Sheriff, Calhoun; Frio	40	15	40
(20) South Tulsita-Wilcox, Bee; Wilcox	120	29	480
(21) South Yoakum, DeWitt; Wilcox	160	30	160
(22) Theis, Bee; Hockley sand	120	9	360
(23) West Goliad, Goliad; Wilcox	80	10	160
(24) Willmann, San Patricio; Frio	280	3	280
(25) Unnamed, Brooks; Frio	40	6	120
(26) Unnamed, Goliad; (9900)	160	10	320
(27) Unnamed, Karnes; Wilcox	160	4	160
(28) Unnamed, Karnes; Wilcox	160	34	640
Total	3,600		7,200
New Pays			
(1) La Gloria, Brooks; (7150-55)	40	5	40
(2) La Rosa, Refugio; Frio	160	6	160
(3) North La Rosa, Refugio; (6156-72)	160	16	160
(4) La Sal Vieja, Willacy; Frio	40	20	40
Total	400		400

SOUTH TEXAS

Discoveries			
(1) Gormac, Duval; Loma Novia sand	360	10	900
(2) Lefevre, Jim Hogg; Jackson sand	80	6	80
(3) McDermott, Zapata; Queen City sand	40	9	40
(4) Parsons, Starr; Lower Frio	40	14	100
(5) Staggs, Webb; (2807-12)	200	5	500
(6) Unnamed, Duval; Pettus	40	5	80
(7) Unnamed, Starr; Frio	40	21	80
Total	800		1,780
New Pays			
(1) Agua Prieta, Duval; (4200)	40	8	40

SOUTH CENTRAL TEXAS

Discoveries			
(1) Ormsby, Wilson County sand	40	20	100

MISSISSIPPI

Discoveries			
(1) Fayette, Jefferson; Tuscaloosa	80	6	1,200
(2) Hub, Marion; Tuscaloosa	80	2	800
(3) Langsdale, Clarke; Eutaw	1,000	10	10,000
(4) Quitman, Clarke; Eutaw	....	2	.....
(5) Soso, Jasper, Tuscaloosa	160	10	600
(6) Unnamed, Rankin; Gas Rock	....	3	.....
Total	1,320		12,600

ILLINOIS

Discoveries			
Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Keenville, Wayne; Aux Vases	40	10	100
(2) Passport, Clay; Rosiclare, McCloskey	160	8	380
(3) Brownsville, White; Paint Creek, Cypress, Aux Vases, Levias, McClosky	1,120	24	4,200
(4) Willow Hill, North, Jasper; McCloskey	80	6	220
(5) Odin, Marion; Cypress	760	7	1,960
(6) Seminary, Richland; McClosky	80	4	200
(7) Shattuc, Clinton; Cypress	80	6	210
(8) Ingraham, West, Clay; Cypress, McClosky	80	12	240
(9) Huey, Clinton; Benoist	120	11	310
(10) Springerton, Hamilton; Aux Vases	120	19	340
(11) Stanford, Clay; Rosiclare, McClosky	280	6	700
(12) Samsville, North, Edwards; Benoist	40	6	110
(13) Goldengate, North, Wayne; Levias	80	7	210
Miscellaneous*	560	...	1,120
Total	3,600		10,300

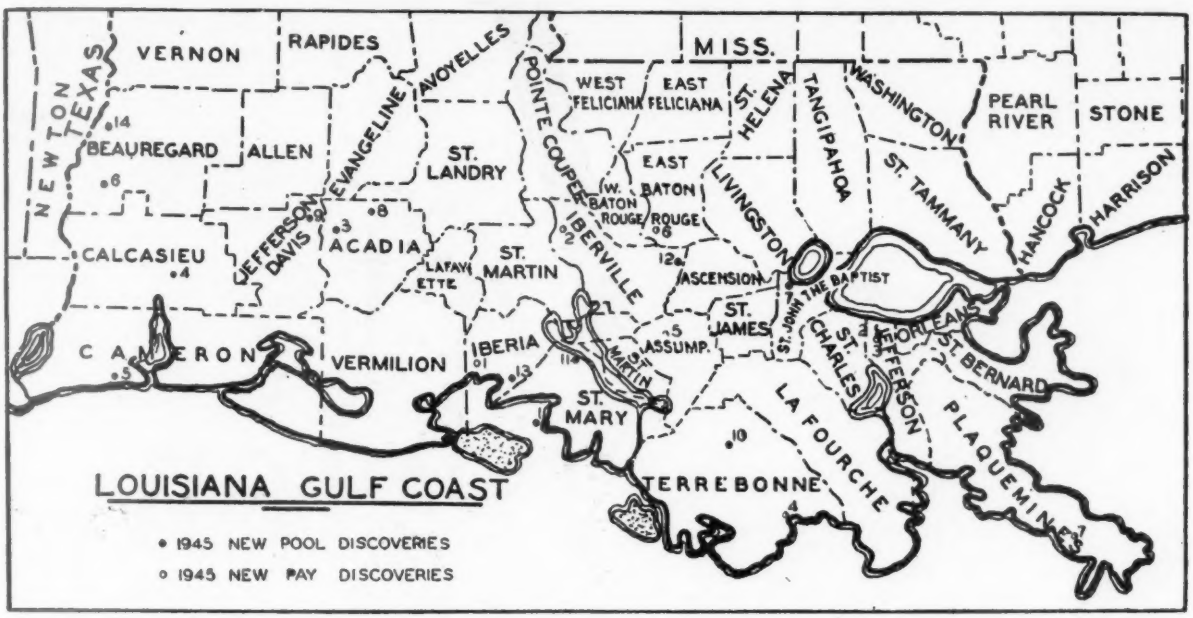
*Includes (14) Iola, West, (15) Maple Grove, South, (16) Aden, South. (17) Maunie, West, (18) Rural Hill, West, (19) Shawneetown, (20) Hunt City, (21) Gallagher, (22) Parkersburg, North, (23) Bartelso, West, (24) Markham City, West, (25) Newton, North, (26) Sumpter, (27) Unnamed.

INDIANA

Discoveries			
(1) Jeffries, Posey; Tar Springs	120	12	270
(2) Unnamed, Posey; Waltersburg	40	16	40
Total	160		310
Extensions			
(1) Farmersville, Posey; Penn. sand	200	7	310
(2) St. Thomas, Knox; McClosky	24	10	340
Total	224		650

ALABAMA

Discoveries			
(1) East Gilbertown, Choctaw; Eutaw	80	3	400



SOUTH LOUISIANA

Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Bayou Carlin, St. Mary; Miocene	80	11	600
(2) Bayou Perot, Jefferson; Miocene	80	7	480
(3) Iota, Acadia; Frio	80	10	320
(4) Lake Charles, Calcasieu; Hackberry	80	10	400
(5) Mud Lake, Cameron; Miocene	160	8	640
(6) Oretta, Beauregard; Lower Cockfield	320	20	1,120
(7) Reserve, St. John the Baptist; Frio sand, Oligocene	80	12	640
(8) South Bayou Mallett, Acadia; Chickasawhay sd., Oligocene	160	4	320
(9) South Elton, Jefferson Davis; Frio sand	160	21	1,600
(10) South Houma, Terrebonne; Miocene	80	9	80
(11) South Jeanerette, St. Mary; Miocene	80	8	400
(12) South St. Gabriel, Iberville; Marginulina sand	80	4	40
(13) Week's Island, Iberia; Miocene	80	15	560
(14) West Pinegrove, Beauregard; Wilcox	80	7	320
Total	1,920		7,520

New Pays

(1) Avery Island, Iberia; Frio and Miocene	160	27 (2 pays)	1,200
(2) Bayou des Glaise, Iberville; Frio	80	10	600
(3) Bayou Perot, Jefferson, Miocene	80	25	240
(4) Lake Barre, Terrebonne; Miocene	80	16	160
(5) Napoleonville, Assumption; Miocene	40	5	240
(6) University, East Baton Rouge; Frio	80	12	240
(7) Venice, Plaquemines; Miocene	40	18	120
Total	560		2,680

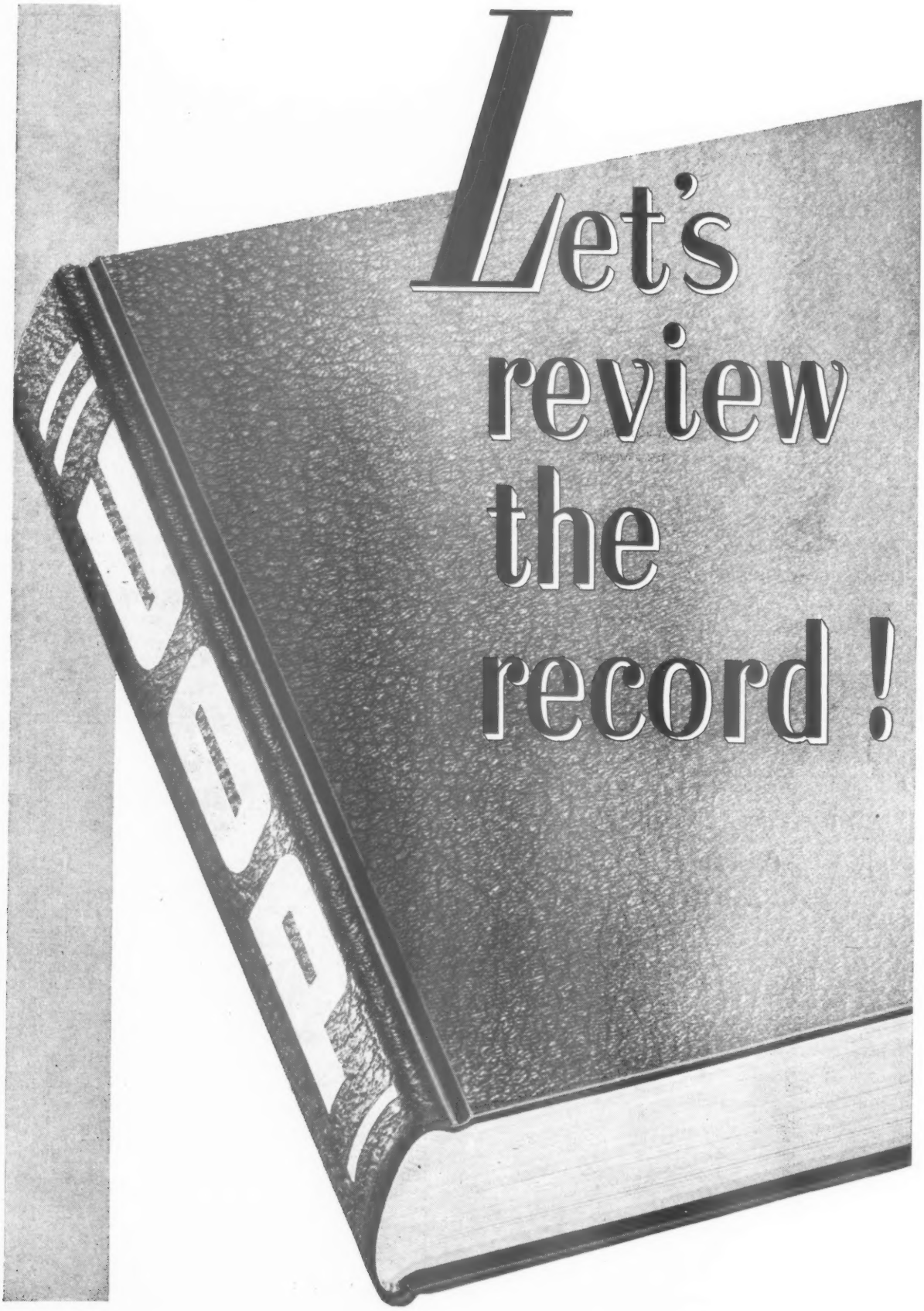
OKLAHOMA

Discoveries

(1) Asher, West, Pottawatomie; dolomite	120	10	400
(2) Antioch, East, Garvin; First Bromide	80	7	160

OKLAHOMA (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(3) Aylesworth, Northwest, Marshall; Third Bromide	40	25	160
(4) Aylesworth, Southeast, Bryan; sand	40	15	160
(5) Barnes, North, Garfield; Second Wilcox	80	10	320
(6) Bethany, Oklahoma; Hunton	200	46	500
(7) Billings, West, Noble; sandy dolomite	80	16	400


Let's
review
the
record !

- UOP has been responsible for the development of many of the major improvements in refining processes including:

Thermal cracking • Catalytic cracking • Polymerization • Alkylation
Isomerization • Hydrogenation • Dehydrogenation

- UOP, in cooperation with others, has developed and made available the highly successful Unisol process of mercaptan removal.

- UOP has developed three types of inhibitors which were used for the treatment of millions of gallons of gasoline used in the war.

- UOP has developed a complete line of catalysts to meet the requirements of every type and grade of gasoline.

- UOP maintains one of the largest and best equipped petroleum products research laboratories in the world, devoted to the further improvement of refining processes and for the solution of the refining problems of UOP licensees.

- UOP maintains a force of field men for the purpose of instructing operators in the correct operation of new process equipment, and in addition a staff of inspectors who, at the request of each licensee, visit licensed UOP units for the purpose of making physical inspection, testing instruments for accuracy, checking up on corrosion and fire hazards, and recommending such steps as may be found necessary to assure continued high efficiency.

In making your plans for tomorrow, we believe you'll find it well worthwhile to give careful consideration to the processes, products, and services which UOP offers, and the record of achievement which lies back of them.

UNIVERSAL OIL PRODUCTS COMPANY

General Offices: 310 S. MICHIGAN AVE. UOP CHICAGO 4, ILLINOIS, U. S. A.

LABORATORIES: RIVERSIDE, ILLINOIS

UNIVERSAL SERVICE PROTECTS YOUR REFINERY

OKLAHOMA (Continued)

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(8) Blackdog, West, Osage; Burgess, Arbuckle	40	19 & 24	240
(9) Blakely, North, Okfuskee; Booch	80	30	240
(10) Brown, East, Garfield; Second Wilcox	40	24	100
(11) Byars, North, Pottawatomie; Layton	40	2	100
(12) Carnegie, Southwest, Kiowa; Pontotoc	40	16	100
(13) Cashion, Northwest, Kingfisher; Hunton	80	31	400
(14) Chitwood, Grady; Pennsylvanian	320	3	1,000
(15) Coffee Creek, Oklahoma; Hunton	40	69	100
(16) Evansville, Northwest, Logan; Bartlesville	200	12	600
(17) Hobart, Northeast, Kiowa; Pennsylvanian	20	56	100
(18) Hunter, Southwest, Garfield; Wilcox	80	8	320
(19) Jones, Northeast, Oklahoma; Cleveland	40	10	100
(20) Keyes, Cimarron; Cherokee sand	480	40	1,200
(21) Lindsay, North, McLain; Simpson	80	47	1,600
(22) Marlow, West, Stephens; Pennsylvanian	600	42	1,200
(23) Paden, South, Okfuskee; Cromwell	40	20	100
(24) Polo, South, Noble; Bartlesville	80	15	320
(25) Unnamed, Creek; Prue	40	49	100
(26) Unnamed, Logan; Layton	80	19	400
Miscellaneous*	....	....	1,000
Total	3,040		11,420

*32 small discoveries, none of which is estimated as high as 100,000 bbl.

KANSAS

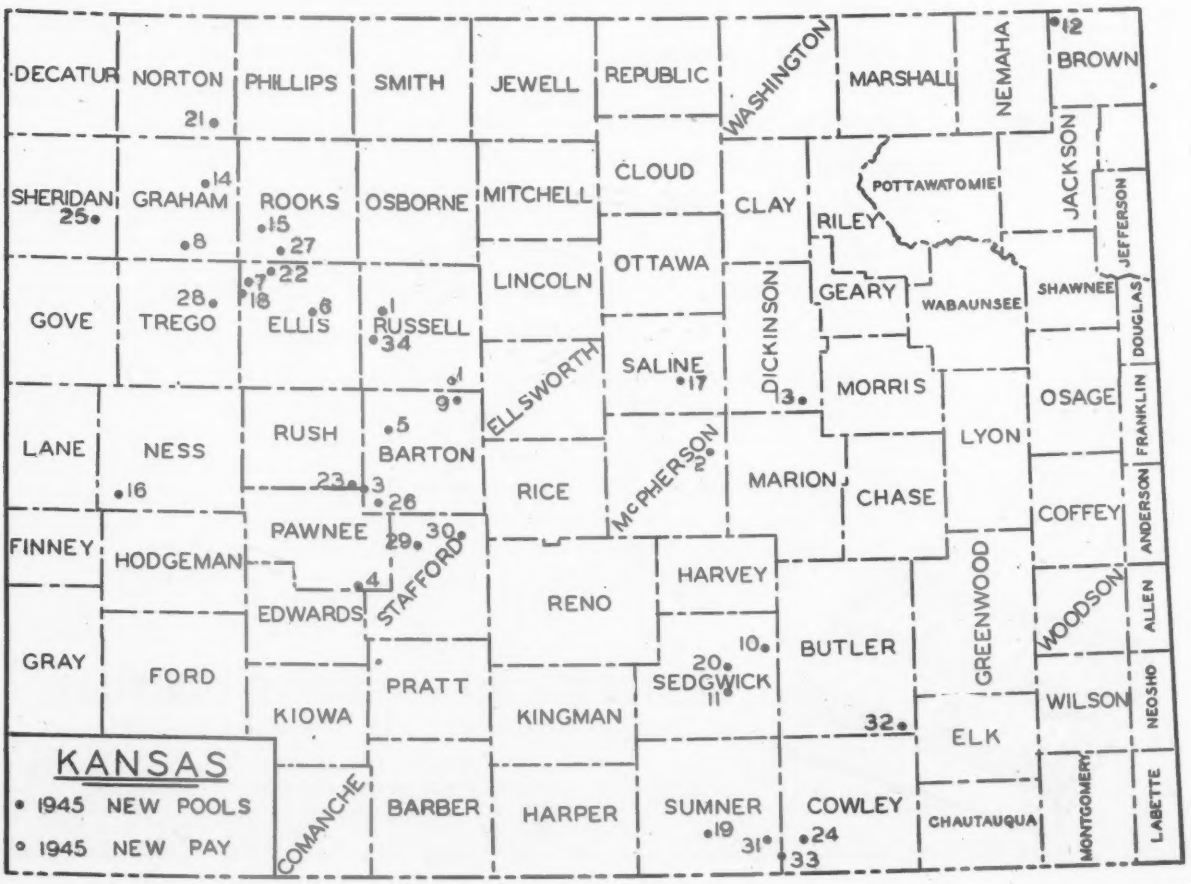
Discoveries

Field and county; producing formation—	Acreage proven (ac.)	Formation thickness (ft.)	Estimated reserves (thou. bbl.)
(1) Atherton, North, Russell; Arbuckle	90	5	360
(2) Battle Hill, McPherson; Mississippi chert	40	9	240
(3) Behrens, Barton; Arbuckle	100	4	600
(4) Benson, Pawnee; Lansing	40	66	160
(5) Carroll, Barton; Arbuckle	150	14	750
(6) Catherine, Northwest, Ellis; Arbuckle	40	33	60
(7) Cromb, Ellis; Lansing	40	4	80
(8) Faulkner, Graham; Kansas City	150	4	450
(9) Feltes, Northwest, Barton; Arbuckle	90	3	360
(10) Greenwich, South, Sedgwick, Mississippi lime	20	6	80
(11) Hohn, Sedgwick; Kansas City	40	49	120
(12) Livengood, Brown; Hunton	50	12	150
(13) Lost Springs, North, Dickinson; Mississippi lime	100	81	200
(14) Luck, Graham; Kansas City	40	20	80
(15) McClellan, Rooks; Lansing	40	5	100
(16) Manteno, Ness; Mississippi lime	40	30	120
(17) Mentor, Saline; Viola	20	67	40
(18) Nicholson, Ellis; Arbuckle	40	11	240
(19) Perth, Sumner; Simpson	40	13	200
(20) Petrie, Sedgwick; Viola	40	3	120
(21) Ray, West, Norton; Arbuckle	120	6	360
(22) Richards, Southwest, Ellis; Kansas City	60	11	100
(23) Ryan, Rush; Arbuckle	609	2	3,600
(24) Seacat, Cowley; Mississippi lime	20	15	40
(25) Studley, Southwest, Sheridan; Lansing	40	74	50
(26) Unruh, Barton; Arbuckle	40	2	240
(27) Vohs, Rooks; Arbuckle	40	5	200
Miscellaneous*	....		50
Total	2,130		9,150

*Cotton (28), N.W. Drach (29), Sand Hills (30), Valverde (31), N. Hanna (32), W. Geuda Springs (33), W. Atherton (34).

New Pays

(1) Forest Hill, Russell; Topeka	80	8	240



AT BORGER, TEXAS...
a sound investment indeed!

Power for all electrical equipment in the entire synthetic rubber project at Borger, Texas, is supplied by 18 efficient GMV gas engines driving generators. Installed in the government-owned Phillips Petroleum Company operated butadiene plant where rated capacity is 45,000 short tons per year, these Cooper-Bessemer 10-cylinder V-type engines also supply all electrical power for the directly adjacent copolymer plant where the butadiene is received by pipeline and converted into raw synthetic rubber.

These compact, 1000 hp GMV's are a sound investment indeed. They have been operating in this plant for well over two years, giving economical, trouble-free service. Years from now their performance will be just as creditable. But there's much more to say for these modern Cooper-Bessemer engines. They are extremely versatile — ready for the future whatever it may bring!

For example, next year or ten years from now they can be quickly, easily changed to compressor units, should this become desirable. No reconstruction, no major part replacements. Standard or specially designed Cooper-Bessemer compressor cylinders can readily be attached, converting the units into direct-drive, V-angle compressors. And, since all crankthrows are available for driving compressor cylinders, each engine can power 1, 2, 3, 4, or 5 cylinders, as required, for any pressure or volume within the horsepower range.

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by **Cooper-Bessemer**

MOUNT VERNON, OHIO AND GROVE CITY, PENNA.

Houston, Dallas, Greggton, Pampa and Odessa, Texas Tulsa Shreveport St. Louis Los Angeles

Annual and Cumulative Production, Remaining Reserves by Fields

On this and the following five pages are detailed remaining reserves of the country's larger fields

PRODUCTION AND RESERVES—CALIFORNIA FIELDS

(In thousands of barrels)

SAN JOAQUIN VALLEY

	1945 production	January 1, 1946 — Cumulative	Estimated reserves	No. of wells
Ant Hill	205	222	2,227	21
Antelope Hills	681	2,208	7,778	29
Antelope Plains	7	13	187	0
Arvin	14	1,612	188	2
Bellevue	193	354	841	3
Belridge, North	2,328	51,800	18,199	84
Belridge, South	4,651	35,173	36,818	796
Blackwells Corner	49	101	1,087	22
Buena Vista Hills	15,759	315,373	104,626	1,027
Burrel	12	25	225	2
Canal	1,252	11,649	18,349	39
Canfield	12	142	57	1
Coalinga, East	7,563	249,824	75,184	590
Coalinga Nose	21,096	98,255	281,743	218
Coalinga, West	2,890	156,235	28,766	776
Coles Levee, North	6,008	25,550	74,453	83
Coles Levee, South	926	6,262	29,235	34
Dyer Creek	.....	28	.....	.....
Edison	2,141	13,643	25,360	188
Elk Hills	15,813	191,064	243,936	250
Fruitvale	3,097	35,746	24,242	209
Gosford	44	56	740	2
Greeley	5,062	24,145	40,854	97
Helm	1,167	1,915	8,608	48
Jacalitos	1,152	1,566	7,590	43
Kern Front	4,686	64,473	42,104	758
Kern River	3,547	294,282	35,721	2,044
Kettleman Middle Dome	.....	544	.....	.....
Kettleman North Dome	14,349	310,052	130,454	306
Lanare	179	247	1,428	15
Lost Hills	1,218	57,760	12,239	386
McClung	23	89	360	1
McKittrick-Cymric	2,017	99,963	21,742	356
Midway-Sunset	14,373	690,338	129,651	2,736
Mountain View	1,021	45,140	11,662	166
Mount Poso	6,726	86,108	69,940	503
Paloma	812	2,819	25,461	25
Pleasant Valley	1,309	2,479	15,020	22
Pyramid Hills	136	209	1,048	21
Race Track	217	224	2,146	10
Raisin City	1,175	2,861	8,669	37
Rio Bravo	5,732	33,462	66,538	100
Riverdale	1,577	3,779	14,463	52
Rosedale	32	32	468	4
Round Mountain	3,506	46,703	33,540	322
Santiago	127	127	2,373	4
Shafter	.....	53	.....	.....
Sheep Springs	202	235	495	5
Strand, East	269	548	1,953	7
Strand, West	568	3,429	6,572	17
Tejon	165	229	1,273	19
Ten Section	4,105	35,682	54,311	118
Union Avenue	45	240	1,010	5
Wasco	511	4,300	5,700	12
Wheeler Ridge	86	4,292	709	34
Misc. small pools	11	19	52	10
Total San Joaquin Valley	160,843	3,015,679	1,728,395	12,659

COASTAL DISTRICT

Aliso Canyon	1,152	5,431	19,969	34
Bradley Canyon	17	22	.....	.....
Capitan	767	9,516	14,984	53
Del Valle	722	2,760	7,748	20
Elwood	2,171	75,163	21,837	63

COASTAL DISTRICT (Continued)

	1945 production	January 1, 1946 — Cumulative	Estimated reserves	No. of wells
Gato Ridge	1,607	11,401	15,596	36
Goleta	.....	136	.....	.....
Newhall Potrero	1,984	9,434	24,310	51
Oak Canyon	746	1,647	9,351	15
Oxnard	329	588	2,171	6
Padre Canyon	750	3,444	10,555	27
Ramona	66	66	184	5
Rincon	1,660	19,490	18,259	99
San Martinez	1,194	2,847	12,694	30
San Miguelito	1,928	12,911	42,091	36
Santa Barbara	33	3,634	366	14
Santa Maria	5,057	158,004	73,814	319
Santa Maria Valley	13,538	63,034	107,043	414
Summerland	.....	3,179	21	0
Ventura Avenue	17,663	303,113	206,884	539
Ventura Newhall	2,255	71,740	20,992	562
Watsonville	9	1,520	30	7
Zaca	45	45	455	1
Total Coastal district	53,743	759,125	609,354	2,331

LOS ANGELES BASIN

Brea Olinda	4,194	176,858	44,135	361
Buena Park	39	163	137	2
Coyote, East	1,831	51,488	23,515	151
Coyote, West	5,266	144,413	50,567	159
Dominguez	6,722	162,007	72,992	316
El Segundo	287	11,554	2,448	30
Huntington Beach	17,558	361,588	168,409	839
Inglewood	5,640	151,589	48,401	304
Lawndale	9	1,162	83	3
Long Beach	9,803	712,419	92,585	1,137
Los Angeles-Salt Lake	179	66,925	953	94
Montebello	3,658	142,940	30,285	354
Newport-Costa Mesa	371	511	4,671	49
Playa Del Rey	904	52,157	7,844	109
Potrero	381	5,745	1,516	28
Richfield	2,725	106,404	25,593	334
Rosecrans	2,087	57,578	19,916	205
Sansinena	22	22	378	2
Santa Fe Springs	6,258	502,820	64,680	556
Seal Beach	3,425	102,046	40,454	158
Torrance	3,244	117,097	35,395	731
Turnbull Canyon	65	396	604	4
Whittier	367	26,773	3,269	167
Wilmington	36,222	281,478	350,730	1,468
Yorba Linda	152	757	4,240	.....
Total Los Ang. Basin	111,409	3,236,890	1,093,805	9,892
Total California	325,995	7,011,694	3,431,554	24,882

ROCKY MOUNTAIN AREA

(In thousands of barrels)

WYOMING

Big Muddy	542	28,845	5,040	154
Big Sand Draw	333	333	6,000	2
Byron	2,429	13,943	16,940	41
Circle Ridge	261	844	2,340	10
Cole Creek	568	2,414	11,432	37
Dallas Derby	156	3,757	2,080	34
Elk Basin	3,048	19,820	151,180	214
Elk Basin, South	116	116	284	2

WYOMING (Continued)

	1945 production	January 1, 1946 Cumulative	Estimated reserves	No. of wells
Frannie	1,518	10,299	11,140	35
Garland	1,166	7,127	22,834	41
Gebo	672	835	5,200	10
Grass Creek	1,041	34,121	18,959	344
Hamilton Dome	900	7,831	9,269	34
Hudson	87	2,588	1,418	29
La Barge	528	9,758	5,082	144
Lance Creek	5,463	69,123	43,560	233
Lost Soldier	1,525	29,821	33,475	58
Mahoney	212	1,933	1,890	10
Maverick Springs	338	2,634	3,412	42
Medicine Bow	182	4,661	1,018	7
Mule Creek	99	1,770	1,400	42
Notches	118	566	1,932	6
Oregon Basin	4,394	34,521	122,905	148
Osage	157	5,515	2,198	198
Pitchfork	120	171	1,129	3
Pilot Butte	296	1,876	4,250	12
Poison Spider	229	4,770	2,600	36
Quealey Dome	251	1,942	1,700	17
Rock River	860	24,406	9,460	52
Salt Creek	4,499	317,664	53,900	1,786
Steamboat Butte	1,055	1,880	13,120	9
Wertz	1,460	11,746	17,520	23
Miscellaneous	1,696	10,251	17,360	170
Total Wyoming	36,319	*667,881	602,027	3,983

*Includes abandoned pools.

MONTANA

	1945 production	January 1, 1946 Cumulative	Estimated reserves	No. of wells
Cat Creek	101	15,608	2,400	118
Cut Bank	4,907	47,196	53,977	825
Dry Creek	158	2,306	1,020	8
Elk Basin	947	2,916	14,113	48
Kevin-Sunburst	1,936	47,232	19,721	1,042
Pondera	253	6,911	1,010	121
Miscellaneous	205	2,399	2,152	43
Total Montana	8,507	*124,568	94,393	2,205

*Includes abandoned pools.

COLORADO

Clark's Lake	99	166	734	5
Florence	42	13,880	300	50
Fort Collins - Wellington	147	7,627	1,130	22
Hiawatha	68	846	480	8
Iles Dome	429	10,979	3,571	28
McCallum, N. & S.	160	210	2,730	9
Moffat	107	6,271	1,040	11
Powder Wash	76	244	1,256	6
Price	201	2,254	2,010	9
Rangely	1,495	3,444	164,556	66
Tow Creek	41	1,916	220	5
Wilson Creek	1,997	5,561	28,009	21
Abandoned pools	.....	1,299	.....	.....
Total Colorado	4,862	*54,697	206,036	240

*Includes abandoned pools.

PRODUCTION AND RESERVES—TEXAS

(In thousands of barrels)

NORTH AND WEST CENTRAL TEXAS

	1945 production	January 1, 1946 Cumulative	Estimated reserves	No. of wells
Archer County:				
Hull-Silk-Sikes-Caddo	3,975	23,351	39,135	432
Baylor County:				
Seymour	412	2,173	4,127	35
Clay County:				
Antelope	698	2,658	7,342	82
Cooke County:				
Walnut Bend	2,519	11,412	13,588	175
Jones County:				
Avoca	559	3,694	6,306	47
Wimberly	1,284	2,813	3,987	117
Montague County:				
Dodson	515	1,203	3,797	28
Hildreth	2,160	3,555	21,445	124
Ringgold	361	1,245	3,555	24
Taylor County:				
Reddin	380	710	2,890	57
Wichita County:				
K.M.A.	8,309	75,479	79,521	1,746
Willbarger County:				
Fargo	764	4,033	3,717	52
Miscellaneous	32,592	1,173,561	293,328	24,540
Total N. & W. C. Tex.	54,528	1,305,887	482,738	27,459

WEST TEXAS

Abell	888	4,245	8,755	106
Apco-Warner	722	1,955	10,045	47
Barnhart	1,643	2,924	27,076	39
Big Lake	1,407	102,799	14,201	192
Cedar Lake	762	2,585	12,415	56
Cowden North and Deep	9,997	47,215	117,785	663
Cowden South	1,358	6,403	13,597	128
Eaves	703	2,071	3,929	23
Embar	1,457	3,475	16,525	38
Emma	1,010	3,472	15,528	75
Emperor	478	4,906	4,094	127
Foster	6,068	30,290	47,710	588
Fuhrman-Mascho	1,662	6,682	23,318	194
Fullerton	6,478	9,745	190,255	326
Goldsmith	8,381	63,601	181,399	998
Harper	476	9,547	2,453	168
Henderson	1,200	10,993	9,007	98
Hendrick	1,555	209,712	15,288	240
Howard-Glasscock	4,948	118,877	56,213	860
Iatan-E. Howard	1,595	20,748	19,252	367
Johnson	1,368	5,422	24,588	126
Jordan	2,274	12,055	27,945	220
Kermit	914	33,063	11,937	743
Keystone	6,535	20,198	339,802	483
McCamey	3,199	64,133	45,867	831
McElroy	10,717	154,311	95,689	634
Mabee	1,038	1,396	23,604	63
Means	1,225	9,369	55,631	127
Monohans	345	675	11,325	12
Ownby	345	637	3,863	30

WEST TEXAS (Continued)

	1945 production	January 1, 1946 Cumulative	Estimated reserves	No. of wells
Penwell	1,133	26,530	13,470	177
Seminole	8,088	25,063	104,937	327
Shipley	482	7,193	9,807	141
Slaughter	23,440	72,299	407,701	1,889
Taylor-Link	444	9,201	5,799	146
Toborg	442	8,802	6,198	260
Todd Deep	735	1,155	18,845	41
Union	544	836	14,164	23
T-X-L	618	618	55,000	58
Waddell	1,403	7,893	42,107	127
Ward North-Estes	4,622	52,283	47,717	846
Ward South	620	29,355	5,645	525
Wasson	23,256	102,160	477,840	1,554
Westbrook	551	10,674	9,326	154
Wheeler	660	1,006	48,994	16
World	711	9,847	10,153	93
Yates	13,053	300,880	339,120	570
Miscellaneous	13,556	86,643	66,525	2,555
Total West Texas	174,706	1,715,942	3,088,044	18,104

SOUTH AND SOUTH CENTRAL TEXAS

Caldwell County:				
Luling-Branyon	1,563	86,546	21,882	682
Salt Flat	625	45,676	5,675	232
Duval County:				
Benavides	1,274	15,336	11,664	186
Conoco Driscoll	1,017	7,897	12,103	61
Government Wells	2,282	56,871	28,129	616
Hoffman	1,300	13,254	11,746	305
Loma Novia	1,087	30,847	14,153	477
Lundell	367	2,515	5,485	95
Piedre Lumbre	762	5,271	7,729	125
Sejita	421	987	19,013	27
Seven Sisters	2,391	24,332	20,668	389
Frio County:				
Pearsall	412	2,741	4,259	46
Guadalupe:				
Darst Creek	3,139	62,346	17,121	325
Jim Hogg County:				
Colorado	707	4,387	7,613	231
La Salle County:				
Washburn Ranch	336	894	3,506	22
Starr County:				
Rincon and North	2,942	12,015	32,885	193
Sun and North	1,597	5,583	14,417	110
Webb County:				
Lopez	775	15,061	6,939	291
O'Hern	553	12,450	5,550	141
Zapata County:				
Escobas-Jennings	439	11,971	3,029	274
Miscellaneous	11,466	157,156	114,881	4,132
Total S. & S. C. Tex.	34,438	566,239	368,447	8,899

EAST TEXAS

	1945 production	January 1, 1946 Cumulative	January 1, 1946 Estimated reserves	January 1, 1946 No. of wells
East Texas Field	131,210	2,226,504	2,673,496	23,490
Anderson County:				
Cayuga	2,594	37,099	32,406	220
Long Lake and East	1,962	18,253	29,538	162
Cass County:				
Rodessa	1,414	56,733	7,070	284
Franklin County:				
New Hope	1,596	2,722	18,578	53
Hopkins County:				
Sulphur Bluff	1,350	13,854	19,950	69
Limestone County:				
Mexia	491	99,896	7,500	165
Navarro County:				
Powell	454	113,178	6,166	145
Smith County:				
Chapel Hill	454	4,765	12,235	52
Titus County:				
Talco	8,284	83,805	84,716	710
Van Zandt County:				
Van and Shallow	10,494	161,597	290,506	590
Wood County:				
Coke	840	2,194	8,306	27
Hawkins	12,210	46,666	159,334	412
Manziel	563	1,123	5,877	28
Quitman	2,130	4,853	21,147	65
Miscellaneous	3,472	46,406	41,664	1,823
Total East Texas	179,518	2,919,648	3,418,489	28,295

TEXAS PANHANDLE

Carson County	4,552	55,525	54,475	775
Gray County	14,880	246,569	213,331	2,581
Hutchinson County	10,872	200,412	109,588	2,222
Moore County	137	5,749	1,241	16
Wheeler County	893	25,375	9,625	350
Miscellaneous	217	1,943	1,057	90
Total Panhandle	31,551	535,573	389,317	6,034

NEW MEXICO

Eddy County:				
Artesia	152	5,290	2,210	149
Grayburg-Jackson	1,952	17,447	22,553	278
Loco Hills	993	9,931	16,069	196
Russell	112	192	908	24
Square Lake	1,008	3,530	17,470	185
Lea County:				
Arrowhead	1,839	9,755	20,245	124
Cooper-Jal	750	22,296	8,704	119
Eaves	327	3,471	3,129	23
Eunice	5,707	77,143	72,857	477
Hobbs	3,874	112,700	62,300	253
Langlie-Mattix	1,341	19,191	12,809	314
Lovington (S. & W.)	1,093	3,993	11,007	90
Lynch	104	7,298	1,202	9
Monument	7,139	73,927	101,073	499
Paddock	65	65	4,295	14
Penrose-Skelly	808	13,448	8,552	283
Rhodes	373	1,373	7,127	44
South Eunice	589	7,627	3,373	82
Vacuum	4,585	31,107	98,893	359
West Eunice	398	1,535	4,165	27
McKinley County:				
Hospah	305	1,579	2,421	39
Miscellaneous	4,172	26,754	78,750	665
Total New Mexico	37,686	449,652	560,112	4,249

LOWER GULF COAST TEXAS

Aransas County:				
Aransas Pass	1,318	15,048	11,012	128
Brooks County:				
Kelsey	1,136	4,563	14,437	99
Calhoun County:				
Heyser	2,778	26,606	23,394	198
Dewitt County:				
Slick	1,267	2,173	5,827	49
Jim Wells County: Seeligson-Canales-Tijerina	11,384	21,322	378,672	545
Nueces County:				
Agua Dulce-Stratton	7,608	22,430	102,570	368
Clara Driscoll & South	857	7,468	9,532	114
Flour Bluff and East	1,386	11,533	14,467	100
Richard King	1,172	5,271	10,729	92
Saxet	1,839	60,589	14,411	200
Refugio County:				
Greta & Greta Deep	3,171	36,754	23,246	200
La Rosa	1,413	7,402	12,598	79

LOWER GULF COAST TEXAS (Continued)

	1945 production	January 1, 1946 Cumulative	January 1, 1946 Estimated reserves	January 1, 1946 No. of wells
Refugio	1,905	49,581	25,419	156
Tom O'Conner	17,676	83,103	366,897	453
San Patricio County:				
Midway	1,218	5,295	9,705	70
Odem	709	2,528	7,462	61
Plymouth	3,148	35,837	29,167	180
Taft	1,015	7,934	7,066	76
White Point, East	4,423	24,006	40,994	248
Victoria County:				
McFaddin	1,641	9,114	10,886	86
Placedo	1,741	18,622	16,378	148
Willacy County:				
Willamar	2,783	4,241	31,759	130
Miscellaneous	13,760	90,972	34,473	1,464
Total Lower Gulf Coast	85,348	552,402	1,201,051	5,244

UPPER GULF COAST TEXAS

Austin County:				
Raccoon Bend	3,330	35,110	29,890	158
Brazoria County:				
Hastings	20,608	106,295	268,705	660
Lochridge	638	5,880	6,120	40
Manvel	2,827	31,777	28,233	150
Old Ocean	5,936	34,846	165,154	136
West Columbia	2,626	98,549	26,441	150
Chambers County:				
Anahuac	10,923	55,378	219,622	345
Barbers Hill	1,927	83,315	26,685	119
Fig Ridge	2,817	6,404	28,596	70
Oyster Bayou	2,067	5,733	8,267	20
Red Fish Reef	670	2,931	7,069	15
Seabreeze	646	2,279	4,721	16
Turtle Bay	432	3,907	3,093	29
Fort Bend County:				
Sugarland	2,466	38,601	51,399	47
Thompson	12,749	85,050	189,950	337
Galveston County:				
Gillock	1,331	12,511	12,489	89
High Island	902	21,432	8,668	58
League City	817	5,031	6,969	28
Hardin County:				
Silsbee	829	5,490	4,510	45
Sour Lake	601	81,986	8,014	140
Harris County:				
Clear Lake	1,362	6,452	14,548	35
Dyersdale	752	2,846	5,154	63
Fairbanks	2,561	19,392	20,608	288
Goose Creek	456	80,120	4,880	88
Humble	821	129,980	8,020	219
Pierce Jct.	387	37,005	2,995	50
South Houston	1,756	12,608	14,392	85
Tomball	3,653	33,573	31,427	442
Webster (Frendswood)	19,820	64,512	285,488	202
Jackson County:				
Ganado	1,170	4,120	15,880	90
La Ward, North	937	3,185	16,815	102
Lolita	2,214	10,192	24,808	188
Maubro	689	2,448	6,552	80
West Ranch	7,127	33,140	201,860	428
Jefferson County:				
Amelia	1,484	11,936	13,064	93
Fannett	2,660	9,138	10,862	58
Lovells Lake	1,645	9,871	20,129	113
Stowell	6,237	12,822	42,178	94
Liberty County:				
Esperson	1,031	11,257	12,743	88
Hardin	1,111	12,371	7,629	124
Hull	1,489	101,053	13,947	152
Matagorda County:				
Bay City	1,404	9,664	10,336	58
Markham, North	1,514	9,820	15,180	41
Montgomery County:				
Conroe	20,992	206,155	493,845	886
Orange County:				
Port Neches and W.	748	8,244	5,756	48
Polk County:				
Livingston	1,244	9,697	10,303	109
Segno	1,323	10,848	11,152	106
San Jacinto County:				
Mercy	995	3,161	6,839	37
Waller County:				
Katy	467	716	129,284	34
Wharton County:				
Magnet-Withers	2,934	21,525	43,475	256
North Withers	4,311	12,483	27,517	155
Pickett Ridge	508	4,920	5,080	47
Miscellaneous	17,323	444,248	155,224	1,868
Total Upper Gulf	188,267	2,072,007	2,792,565	9,379

PRODUCTION AND RESERVES—OKLAHOMA

(In thousands of barrels)

	1945 production	January 1, 1946 Cumulative	January 1, 1946 Estimated reserves	No. of wells
Caddo County:				
Apache	2,308	8,820	16,180	33
Cement	5,165	38,072	21,928	426
Carter County:				
Fox-Graham	567	43,335	6,665	346
Healdton	2,423	200,918	24,088	1,868
Hewitt	1,084	102,047	7,953	891
Lone Grove	984	1,182	6,318	32
Sholem-Alechem	751	41,062	8,938	302
Tatums-Tussey	1,457	26,775	10,225	341
Wildcat Jim	540	18,907	5,093	97
Cleveland County:				
Moore	256	9,379	2,621	21
Moore, South	751	831	14,119	24
Moore, West	641	933	3,067	20
Cotton County:				
Walters	223	26,442	2,548	211
Creek County:				
Bristow	273	38,639	3,361	122
Cushing	2,814	371,156	28,744	1,682
Glenn	2,359	228,308	21,692	1,782
Slick	370	35,088	3,912	170
Stroud, Southeast	878	1,581	4,419	78
Garfield County:				
Garber	594	57,565	4,435	538
Garvin County:				
Hoover, Northwest	224	326	2,674	24
Pauls Valley	3,181	9,907	13,093	91
Pauls Valley, East	1,264	1,506	5,494	85
Robberson	254	16,305	3,195	166
Grady County:				
Knox	391	16,875	3,125	177
Hughes County:				
Adams	180	2,220	1,071	10
Fish	467	19,798	2,202	135
Holdenville, West	149	5,979	1,021	104
Horns Corner	369	968	3,032	16
Horns Corner, North	189	305	1,695	8
Papoose	121	22,455	1,045	50
Jefferson County:				
Oscar	330	11,708	3,292	191
Kay County:				
Braman District	249	24,383	3,617	70
Dilworth	193	6,211	1,789	79
Tonkawa	385	123,259	6,741	138
Lincoln County:				
Chandler	211	12,790	2,210	50
Davenport	291	12,734	2,266	134
Laffoon	169	2,615	1,885	11
Stroud	312	9,694	5,306	39
Logan County:				
Crescent	1,845	18,016	11,984	108
Guthrie	214	3,104	3,496	29
Lovell, S. & E.	383	3,949	3,051	31
Marshall County:				
Aylesworth	207	347	753	11
Cumberland	4,119	17,830	42,170	133
Noble County:				
Billings	1,296	24,034	7,964	79
Lucien	994	33,282	6,718	120
Otoe City & East	291	1,083	1,417	25
Okfuskee County:				
Cromwell, East	481	5,340	2,160	71
Olympic	345	13,023	3,477	316
Oklahoma County:				
Arcadia, Northeast	284	376	1,124	5
Edmond	654	21,444	3,556	70
Edmond, Northeast	248	847	2,453	22
Edmond, West	26,548	34,753	145,247	698
Oklahoma City	12,968	631,882	68,118	808
Osage County:				
Atlantic	268	5,440	2,144	88
Avant	750	96,999	7,500	766
Burbank	3,128	218,039	31,969	1,688
Burbank, South	2,370	41,017	28,983	222
Flat Rock	223	41,293	2,707	578
Naval Reserve	608	20,035	4,965	231
Pawnee County:				
Lauderdale	192	14,159	2,341	172
Watchorn, East	832	3,175	6,825	26
Payne County:				
Coyle	991	8,003	5,997	31
Mehan, Northeast	326	692	2,608	16
Ramsey	999	10,418	4,582	41
Yale-Quay	596	24,440	7,560	163
Pontotoc County:				
Bebee	723	15,552	6,448	209
Fitts	1,701	102,248	12,752	575
Jesse	526	7,324	5,676	56
Pottawatomie County:				
Gray	271	5,577	2,423	24
Shawnee, Northeast	418	911	2,589	7
St. Louis District	1,703	167,345	12,655	601
Seminole County:				
Allen	1,256	65,398	9,602	458
Bowlegs	1,250	125,500	9,500	198
Carr City	514	33,118	4,382	65
Cheyarha	730	898	5,102	60
Cromwell	796	60,194	7,806	222
Earlsboro District	1,737	187,746	12,254	269
Keokuk	530	14,371	5,629	79
Konawa District	464	19,082	3,418	146
Little River District	1,492	136,924	8,076	275
Sasakwa District	290	14,610	2,890	65
Searight District	372	39,739	3,261	71
Seminole	1,990	160,304	14,696	301
Wewoka District	617	44,984	3,016	143
Stephens County:				
Doyle	359	2,106	2,394	53
Duncan, N. & W.	842	11,904	4,096	172
Empire	378	16,249	3,751	241
Loco & West	337	2,692	6,308	201
Velma	1,024	8,984	6,016	769
Tillman County:				
Frederick	210	3,537	1,463	25
Misc. Oklahoma	23,322	1,360,900	174,288	30,293
Total Oklahoma	139,379	5,452,304	1,003,419	52,688

PRODUCTION AND RESERVES—LOUISIANA

(In thousands of barrels)

SOUTH LOUISIANA				
Anse La Butte	2,436	12,340	23,660	75
Avery Island	901	1,687	12,313	14
Barataria	1,335	6,115	13,885	24
Bayou Blue	684	3,809	6,191	37
Bayou Sale	2,878	8,988	41,112	52
Bosco	997	26,472	10,528	49
Caillou Island	1,889	39,377	20,623	52
Chacahoula	752	4,599	7,401	26
Chalkley	1,042	8,159	6,841	27
Charenton	1,038	12,990	7,010	126
Delta Farms	3,295	3,482	36,518	53
East White Lake	1,190	3,096	11,904	24
Eola	2,476	20,683	19,317	93
Erath	6,318	11,003	88,997	59
Garden Island	1,081	9,677	8,321	38
Gibson, & E. & N.E.	3,360	16,017	18,983	51
Golden Meadow	2,484	22,978	27,022	166
Grand Bay	2,991	14,003	18,997	44
Grand Lake	737	6,912	5,088	21
Gueydan & W.	2,042	8,844	16,156	47
Hackberry, E.	1,615	35,087	19,913	59
Hackberry, W.	2,150	16,218	23,782	82
Iberia	2,136	34,335	35,665	78
Iowa	2,726	57,708	22,292	59
Jennings	2,443	89,422	20,578	110
Lafitte	3,997	44,136	50,864	60
Lake Chicot	776	2,465	7,535	14
Lake Pelto	846	4,372	5,628	22
Lake Salvador	1,544	5,478	14,522	25
Leeville	1,538	28,362	16,638	77
Neale	2,307	8,052	26,948	56
North Crowley	1,657	11,611	14,389	44
Paradis	3,542	15,227	54,773	68
Pine Prairie	1,930	6,434	10,566	59
Port Barre	1,000	14,251	15,749	55
Quarantine Bay	2,937	15,504	19,496	41
Roanoke	834	11,955	8,045	29
St. Gabriel	1,909	7,479	12,521	29
Sulphur Mines	795	18,989	9,011	60
Tepetate & N.	918	14,275	10,725	64
University	1,962	19,189	15,811	72
Venice	3,283	13,253	26,747	36
Ville Platte	2,541	31,847	38,153	251
Vinton	2,671	48,809	16,191	102
West Bay	1,224	4,338	10,662	21
West Cote Blanche	806	3,139	6,861	19
West Lake Verret	973	4,665	10,335	30
White Castle	1,239	10,059	7,941	26
Miscellaneous	19,580	210,974	239,060	859
Total South Louisiana	111,805	1,028,864	1,194,268	3,585
NORTH LOUISIANA				
Bellevue	199	11,517	2,483	201
Caddo	1,913	171,532	18,468	1,417
Catahoula Lake	135	461	1,539	5
Converse	102	2,895	605	63
Cotton Valley	2,430	49,459	35,541	159

NORTH LOUISIANA (Continued)

	1945 production	January 1, 1946 Cumulative	Estimated reserves	No. of wells
Cross Lake (Shreveport)	518	7,449	2,551	51
Delhi	1,024	1,024	14,976	68
Elm Grove	99	4,188	812	39
Haynesville	2,379	87,977	37,023	346
Holly	351	1,708	1,792	36
Holly Ridge	1,430	2,287	27,713	36
Homer	957	75,423	9,577	312
Lake St. John	1,800	2,807	47,193	69
Little Creek (Zenoria)	726	4,307	4,693	66
Lisbon	499	12,378	4,622	135
Nebo	3,122	14,178	20,822	148
Olla	2,906	19,626	25,374	183
Red River	384	59,830	5,170	106
Rodessa	2,528	86,272	18,728	334
Sligo	366	4,739	2,761	84
Sugar Creek	289	2,585	2,015	42
Urania	632	28,803	6,197	274
Willow Lake	92	380	420	2
Zwolle	111	16,653	547	38
Miscellaneous	612	7,601	7,980	115
Total North Louisiana	25,604	*676,079	299,602	4,329

*Includes abandoned pools.

PRODUCTION AND RESERVES—KANSAS

(In thousands of barrels)

Barber County:				
Sun City	219	530	1,470	8
Whelan	215	1,345	1,290	19
Barton County:				
Bloomer	2,902	21,611	17,770	262
Carroll	39	39	711	6
Kraft-Prusa-Feltes	4,590	19,538	27,540	430
Ellis County:				
Bemis-Shutts	5,160	37,702	23,766	470
Burnett	3,189	21,908	25,092	208
Walters	347	3,187	2,301	38
Ellsworth County:				
Stoltenberg-Wilkins	2,740	19,409	21,440	278
Graham County:				
Morel	1,076	2,989	8,011	56
Harvey County:				
Hollow-Nikkel	182	19,855	1,080	54
Kingman County:				
Cunningham	540	5,476	3,160	120
McPherson County:				
Bornholdt	1,412	9,052	7,450	142
Crowther	245	728	1,225	22
Graber	269	8,168	810	129
Henne	191	878	572	25
Lindsborg	749	2,869	3,000	106
Ritz-Canton	742	38,603	5,194	212
Voshell	589	25,913	5,900	84
Ness County:				
Aldrich	270	1,064	2,036	21
Phillips County:				
Ray	1,147	4,399	5,721	76
Pratt County:				
Carmi	1,161	4,190	9,310	91
Chitwood	967	1,512	4,908	49
Iuka	191	840	1,337	22
Stark	157	466	634	12
Reno County:				
Burrton-Haury	1,351	39,782	8,211	362
Hilger & N.	274	3,375	2,627	37
Peace Creek	1,305	7,550	8,220	125
Rice County:				
Chase	3,076	40,394	15,380	356
Edwards	946	6,982	5,011	88
Geneseo	2,235	17,079	12,403	197
Raymond	554	8,967	3,874	60
Silica	5,868	66,988	40,040	756
Smyers	224	846	1,443	22
Welch & E. & N.	88	4,686	792	29
Wherry	278	9,558	1,390	105
Rooks County:				
Barry	556	1,097	1,423	25
Laton	223	2,639	892	92
Rush County:				
Otis	293	2,809	2,187	25
Ryan	183	183	3,417	24
Russell County:				
Atherton	150	1,765	1,050	32
Big Creek-Vaughn	793	7,472	10,003	129
Fairport	731	17,805	3,699	145
Gorham	2,068	29,076	15,927	292
Hall-Gurney	3,410	26,080	28,876	553
Russell	424	6,402	3,074	57

KANSAS (Continued)

	1945 production	January 1, 1946 Cumulative	Estimated reserves	No. of wells
Trapp-Sellens	10,631	72,887	61,947	1,055
Williamson	363	1,033	1,815	48
Saline County:				
Hunter	185	415	535	19
Scott County:				
Shallow Water	119	1,447	1,053	12
Sedgwick County:				
Eastboro	100	8,544	900	29
Goodrich	205	3,923	1,577	30
Greenwich	223	10,116	1,561	40
Valley Center	182	21,221	910	57
Sheridan County:				
Adell	220	230	1,570	17
Stafford County:				
Drach	506	1,751	4,024	44
Farmington	192	370	1,331	14
Gates	124	1,215	784	13
Leesburg	253	1,570	1,265	16
Max	141	676	924	12
Richardson	653	7,123	5,878	61
Sittner & South	419	1,961	4,039	52
Stafford	304	1,767	1,822	21
Zenith	2,912	20,847	22,560	382
Sumner County:				
Churchill	98	18,920	1,077	58
Oxford	178	15,220	1,245	45
Wellington	191	5,645	1,252	95
Miscellaneous W. Kansas	8,217	70,428	45,329	1,411
Subtotal W. Kansas	80,735	*821,115	*516,065	10,012
Eastern Kansas	15,761	*746,218	115,847	16,680
Grand total Kansas	96,496	1,567,333	631,912	26,692

*Includes abandoned pools.

PRODUCTION AND RESERVES—ARKANSAS

(In thousands of barrels)

Atlanta	1,337	6,353	9,913	50
Buckner	614	5,380	8,766	27
Champagnolle	335	16,218	3,190	77
Dorcheat-Macedonia	1,700	7,922	20,400	98
El Dorado	299	49,672	4,200	152
El Dorado East	121	9,985	1,210	71
Fouke	886	2,514	6,286	44
Haynesville	777	1,504	7,521	32
Irma-Troy	493	11,304	7,010	128
Magnolia	4,963	41,152	59,187	112
McKamie	1,115	4,293	13,195	21
Midway	2,642	8,401	31,704	40
Mount Holly	264	1,043	2,376	16
New London	372	1,231	2,232	16
Rodessa	227	7,334	2,773	54
Schuler and East	4,693	47,843	36,847	80
Smackover	4,130	407,051	43,060	1,546
Stephens	2,014	12,795	15,205	347
Urbana	407	8,845	2,343	68
Village	809	3,408	8,592	24
Miscellaneous	367	11,472	2,896	184
Total Arkansas	28,565	685,720*	288,906	3,187

*Includes abandoned pools.

MISSISSIPPI-ALABAMA

(In thousands of barrels)

MISSISSIPPI

Baxterville	58	58	21,000	10
Cranfield	2,105	2,643	94,407	44
Eucutta	2,070	2,526	17,474	91
Gwinville	108	111	1,500	13
Heidelberg & W.	2,889	4,330	80,670	104
Langsdale	87	87	9,913	17
Mallalieu	121	153	1,500	2
Pickens	2,097	6,631	29,369	44
Tinsley	9,345	86,194	39,380	311
Miscellaneous	144	218	5,000	13
Total Mississippi	19,024	102,951	300,213	649

ALABAMA

Gilbertown	187	241	1,599	23
Gilbertown, East	3	3	397	4
Total Alabama	190	244	1,966	27

PRODUCTION AND RESERVES—ILLINOIS

(In thousands of barrels)

	1945 production	January 1, 1946 Cumulative	January 1, 1946 Estimated reserves	January 1, 1946 No. of wells
Albion	1,234	4,836	9,164	195
Allendale	517	2,343	4,657	150
Bennington	784	810	1,470	38
Benton & N.	1,217	18,168	7,453	246
Bible Grove & S.	1,757	3,858	7,902	168
Boulder	517	2,058	2,585	31
Boyd	1,372	1,519	3,280	83
Bridgeport, Old & New	2,144	234,013	20,016	3,558
Casey	448	54,663	6,270	2,643
Centralia	1,729	27,644	16,030	616
Clay City Consol.	5,104	41,861	19,339	1,020
Concord	694	1,290	2,310	58
Dale-Hoodville	2,022	21,244	10,108	409
Divide & W.	1,068	1,316	2,284	52
Dix	461	4,518	4,149	80
Dundas Consolidated	873	15,154	4,286	374
Inman, E. N. & W.	598	3,533	2,602	121
Iola	724	2,846	2,172	103
Johnsonville, N. S. & W.	1,119	15,510	5,139	249
Keensburg Consolidated	757	10,474	4,542	321
Lancaster	595	1,531	1,820	73
Louden	9,463	121,283	40,417	1,940
Marine	799	1,295	3,105	55
Mount Carmel & W.	923	5,896	3,692	333
New Harmony Consol.	3,429	32,152	18,551	738
Noble-Schnell N.	2,739	19,672	14,666	269
Patoka and E.	1,574	7,534	9,420	179
Phillipstown	1,244	3,963	4,970	162
Robinson	1,095	152,158	15,400	6,815
Roland	936	5,862	3,720	156
Rural Hill	679	8,731	3,349	197
Salem	6,637	192,194	23,548	2,407
Simms & N.	1,008	5,124	5,126	116
St. James	796	8,528	3,782	186
Sailor Springs, Consolidated	512	2,244	3,936	103
Walpole	564	3,064	2,256	66
Woodlawn	950	8,918	4,712	142
Miscellaneous	14,378	113,440*	421,848	3,452
Total Illinois	73,460	1,161,247**	341,076	27,915

**Increase includes abandoned pools.

PRODUCTION AND RESERVES—MICHIGAN

(In thousands of barrels)

Adams	1,180	5,925	4,900	65
Allegan County	645	12,149	2,580	457
Bloomer	183	232	486	9
Clayton	146	4,166	584	44
Coldwater	991	1,059	5,241	56
Deep River	1,475	2,210	7,800	65
Essexville	319	445	3,235	27
Evart	451	2,405	1,804	27
Fork	1,574	3,867	4,403	57
Freeman-Redding	324	14,252	1,296	97
Goodwell	141	834	420	30
Grand Rapids	300	10,112	1,388	391
Headquarters	468	6,260	936	39
Kawkawlin	655	2,791	3,275	136
Mount Pleasant	253	22,722	2,024	168
Norwich, East	445	656	1,984	34
Ogemaw County	280	5,794	1,400	226
Porter-Yost	710	41,966	4,480	318
Prosper	134	779	221	12
Reed City	4,228	29,053	15,140	195
Rose Lake	210	738	420	18
Van Buren—all pools	323	10,112	1,292	209
Vernon-Leaton	187	7,908	932	73
Winegars	260	15,744	1,256	156
Winterfield	220	3,638	1,112	38
Miscellaneous	1,176	33,893	5,088	601
Total Michigan	17,278	239,710	73,699	3,548

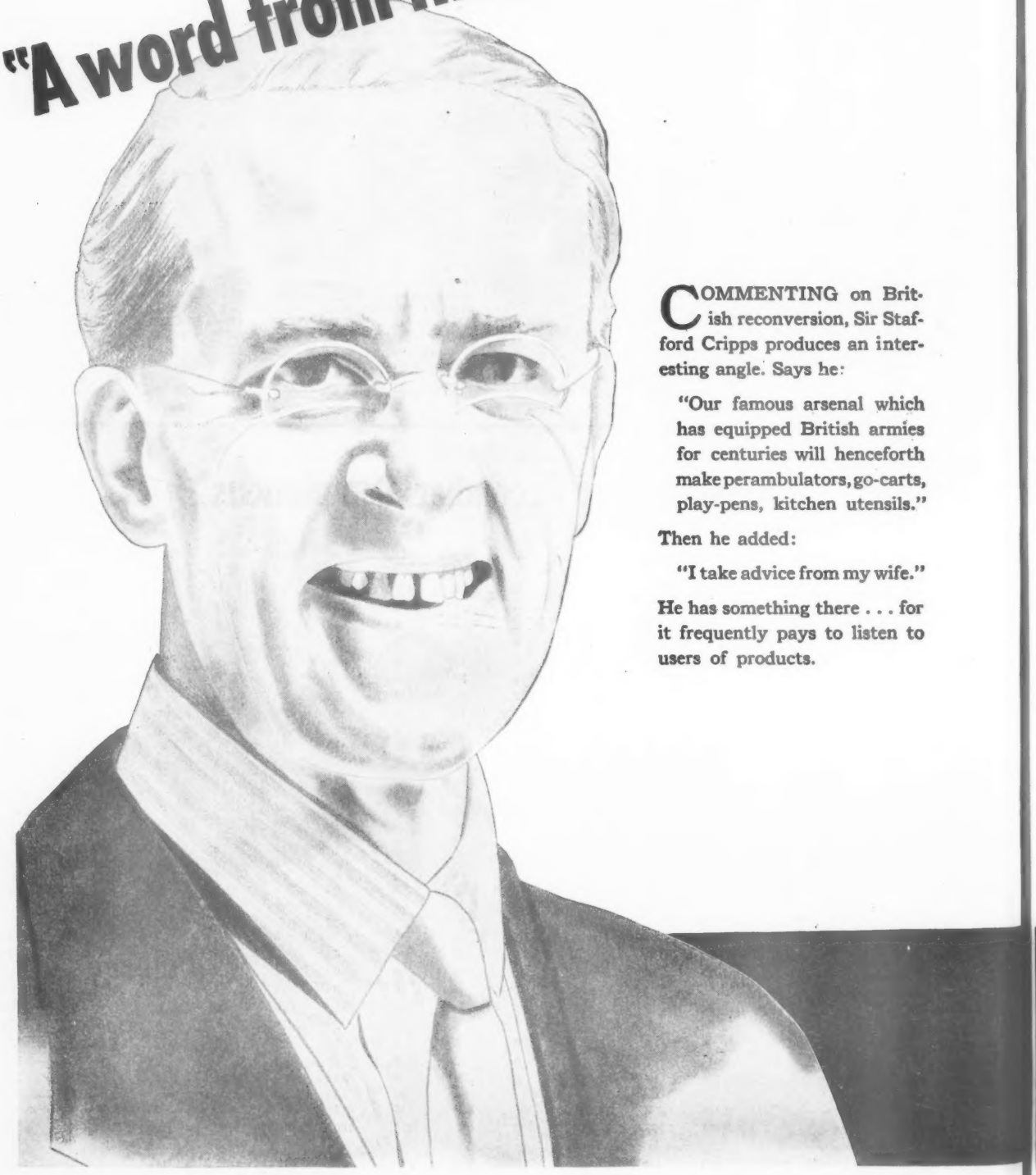
Summary of December Completions*

	Comp.	Oil	Prod.	Gas	Dry	Under 1,000 ft.	1,000-2,500 ft.	2,500-5,000 ft.	5,000-10,000 ft.	Over 10,000 ft.	Total footage	Rigs and drilling
New York	107	54	88	0	†53	0	107	0	0	0	155,237	117
Pennsylvania	264	131	137	20	‡113	29	213	22	0	0	475,301	286
West Virginia	63	9	91	43	11	0	22	39	2	0	175,031	74
Ohio	100	23	461	35	42	8	34	57	1	0	266,589	177
Indiana	15	10	267	0	5	0	13	2	0	0	29,730	31
Kentucky	58	29	3,657	8	21	8	33	17	0	0	113,419	55
Illinois	141	86	12,752	0	53	2	62	77	0	0	348,462	184
Michigan	74	24	18,549	12	38	0	35	39	0	0	188,191	150
Kansas	218	111	45,489	33	74	0	16	201	1	0	719,578	316
Neb., Mo., Iowa	1	0	0	0	1	0	0	1	0	0	2,538	10
Oklahoma	243	137	24,561	27	79	14	51	139	39	0	840,101	486
Texas	738	438	150,514	53	247	40	159	259	258	22	2,279,395	1,154
North	226	124	25,792	1	101	39	97	57	33	0	613,689	223
West Central	53	24	15,310	4	25	1	23	28	1	0	141,773	82
West	152	123	78,475	1	28	0	17	62	63	10	812,300	325
Panhandle	37	18	4,236	17	2	0	2	34	1	0	119,813	98
Eastern	62	36	8,555	12	14	0	6	28	27	1	328,710	134
Upper Gulf Coast	85	42	8,803	9	34	0	5	14	58	8	547,285	109
Lower Gulf Coast	87	57	8,538	7	23	0	2	17	65	3	568,053	127
South	24	8	463	2	14	0	5	15	4	0	91,413	31
South Central	12	6	342	0	6	0	2	4	6	0	56,359	25
Louisiana	129	77	15,104	18	34	13	16	38	43	19	727,462	218
Northern	72	39	7,694	11	22	13	12	35	12	0	240,169	111
Southern	57	38	7,410	7	12	0	4	3	31	19	847,293	107
Arkansas	26	13	990	0	13	0	8	13	5	0	97,973	49
Mississippi	22	16	3,061	0	6	0	0	4	17	1	138,439	58
Ala., Ga., Florida	4	1	96	0	3	0	0	2	2	0	20,686	17
Montana	22	17	1,117	3	2	0	11	10	1	0	53,635	60
Wyoming	24	20	5,087	1	3	0	2	15	7	0	100,792	75
Colorado	9	4	2,130	0	5	1	0	0	8	0	52,258	52
New Mexico	44	32	7,241	0	12	2	10	18	14	0	169,483	105
California	124	96	22,691	5	23	1	24	59	34	6	550,468	153
Total December	2,426	1,330	314,083	258	838	118	816	1,012	432	48	8,504,768	3,827
Total November	2,261	1,156	213,871	262	843	119	790	893	402	57	7,798,640	4,259

*Five weeks ending December 29, 1945. Service wells included: †53, ‡101.

then he said to himself:

"A word from the wife is sufficient"



COMMENTING on British reconversion, Sir Stafford Cripps produces an interesting angle. Says he:

> "Our famous arsenal which has equipped British armies for centuries will henceforth make perambulators, go-carts, play-pens, kitchen utensils."

Then he added:

> "I take advice from my wife."

He has something there . . . for it frequently pays to listen to users of products.

"Take Advice"... *he says*

LOOK, SIR, at the advice given by many users of arc welding:

On heavy work, all positions, TRY "FLEETWELD 47" FOR EASE and get up to 40% faster welding

HOW TO USE "47". Intended for A.C. or D.C. . . . all positions. Take, for example, vertical fillet welds in heavy plate:

Weld vertically upward. Use single pass weave shown. Electrode sizes including ¼" can be used. Do not remove arc from molten pool while making weld. Keep molten pool tilted up into the corner so the slag runs into outer edge.

RESULTS: Ability to use large size rods increases speed up to 40% over other all-position electrodes requiring smaller sizes.

Spatter is negligible. Simply tap the plate and the slag falls off.

FREE. *Handy, pocket-size "Weldirectory" gives procedures for eight types of "Fleetweld" and other Lincoln Electrodes. Ask for Bul. 437.*

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ARC WELDING

Location, Depth, and Initial Production of Discovery Wells

These data supplement the information on newly developed reserves tabulated on pages 187-198. They indicate significant facts upon which to base the year's exploration and development operations

CALIFORNIA

CYMRIC-McKITTRICK — Kern, July, Union Oil Co., 45-26 Anderson, 26-29s-21e, Anderson sand, Miocene age, 3,580-3,610 ft., IP 1,440 bbl. This is a new and heretofore unproductive sand, Carneros sand of Miocene age was missing.

CYMRIC - McKITTRICK — Kern, October, Independent Exploration Co., 1 Anderson-Oceanic, 22-29s-21e, probable Belridge 64 sand, Miocene age, 4,650-700 ft., IP 960 bbl. Carneros sand of Miocene age was faulted out.

CYMRIC-McKITTRICK—Kern, December, Independent Exploration Co., 1 Cymric, 21-29s-21e, Cymric sand, Miocene age, 2,810-64 ft., IP 76 bbl., later building up to 125 bbl.

HASLEY CANYON — Ventura County, January, Shell Oil Co., 88-4 Claiborne, 4-4n-17w, Sespe sand, Miocene age, 3,899-4,020 ft., IP 37 bbl.

KIRBY HILLS—Solano County, January, Shell Oil Co., 1-A Lambie, 25-4n-1w, Kirby Hills sand which is probable equivalent of Emigh sand at Rio Vista, Eocene age, 2,283-2,318 ft., IP 4,000,000 cu. ft. of dry gas, no oil. Discovery well in commercial dry gas field.

McDONALD ANTICLINE — Kern, July, Williams Brothers Oil Co., 1 Layman, 12-28s-19e, Temblor sand, Miocene age, 805-853 ft., IP 49 bbl.

RAMONA—Los Angeles, April, Texas Co., 42-18 Kern, 18-4n-17w, Kern sand, Miocene age, 2,817-3,010 ft., IP 196 bbl.

ROSEDALE—Kern, April, General Petroleum Corp., 44-1 Kernway, 1-29s-26e, possible Chanac sand, Pliocene age, 4,823-38 ft., 4,845-55 ft., 4,860-67 ft., 4,871-77 ft., IP 122 bbl.

RIO VISTA, NORTH—Solano, February, Standard Oil Co., 2 California Packing, 6-4n-3e, Calpac sand possible equivalent of Hamilton sand, Eocene age, 4,760-4,810 ft., IP 14,000,000 cu. ft. dry natural gas, no oil. Discovery well in commercial gas field 4 miles north of Rio Vista gas field.

SANSINENA—Los Angeles, May, Union Oil Co., 15 Sansinena, 30-2s-10w, Puente sand, Miocene age, 3,346-3,595 ft., IP 170 bbl.

SANTIAGO—Kern, August, Western Gulf Oil Co., 2 Woodward-U.S.L., 21-11n-23w, Leutholtz sand in Stevens interval, Miocene age, 2,459-2,677 ft., IP 919 bbl.

SIMI—Los Angeles, September, Union Oil Co., 5 Simi, 22-3n-17w, probable Sespe, Miocene age, 695-1,034 ft., IP 11 bbl.

NEW PAYS

CAPITAN—Santa Barbara, February, Shell Oil Co., 1-35 Covarrubias, 32-5n-30w, Covarrubias sand, Eocene age, 3,556-3,640 ft., IP 1,374 bbl., Sespe not tested.

CAPITAN—Santa Barbara, August, Shell Oil Co., 1-36 Covarrubias, 32-5n-30w, second Sespe, Miocene, 3,805-30 ft., IP 521 bbl. Eocene sand in this well was wet.

EDISON—Kern, July, H. H. Magee, 3 Dougherty, 14-30s-29e, fractured and weathered schist basement, 2,570-2,625 ft., IP 1,000 bbl.

NEWHALL POTRERO — Los Angeles, April, Barnsdall, 44 Rancho San Francisco, 26-4n-17w, Sixth sand, Miocene age, 9,668-98 ft., 9,641-61 ft., 9,702-22 ft., 9,782-9,802 ft., IP 725 bbl.

SAN MARTINEZ—Los Angeles, June, Ohio Oil Co., 13 Vasquez, 17-4n-17w, Vasquez 13 zone, Pliocene - Miocene contact, present only on south flank, 5,565-5,630 ft., IP 430 bbl.

WILMINGTON — Los Angeles, October, Long Beach Oil Development Co., 97-W, 3-5s-13w, tentatively named 237 sand, Miocene age, 6,150-6,228 ft., IP 415 bbl.

WILMINGTON—Los Angeles, December, Long Beach Oil Development Co., 109-W, 10-5s-13w, tentative designated as the 109 zone, Miocene age, 5,870-991 ft., IP on formation test 1,440 bbl. This is first schist-conglomerate test in Wilmington field. Top of conglomerate 5,870 ft., schist 5,950-997 ft.

ROCKY MOUNTAIN AREA

WYOMING

BAILEY—Carbon County, February, Sinclair-Wyoming Oil Co. 1 Coffman, SE NE NE 21-26n-89w, in Sundance sand, Jurassic, 5,098-5,222 ft., IP 400 bbl. Discovered in 1944, completed in 1945. Discovery reserves allotted in 1944.

LAMB—Big Horn County, November, Hageman et al 1 Stanolind, SE SW SE 12-51n-93w, in Tensleep sand 3,449-69 ft., IP 180 bbl. oil and 58 bbl. water.

MIDWAY — Natrona County, November, Kerlyn Oil Co. et al 1 Kerlyn-Government, NE SE NE 23-35n-79w, in Dakota sand, 5,840-80 ft., IP 60 bbl., still testing.

NORTH BAXTER BASIN — Sweetwater County, September, Transcal Petroleum Corp. 1 Union Pacific, NE SE 11-19n-104w, in Entrada sand, Jurassic, 3,855-4,123 ft., IP 88 bbl.

OIL MOUNTAIN—Natrona County, August, Texas Co. 1 Clark, NE NE SW 35-33n-82w, in Tensleep sand 2,622-75 ft., IP 17½ bbl.

SHELDON — Fremont County, August, Phillips Petroleum Co. et al 1 Shoshone (C-107), NE NE 16-5n-2w, in Embar sand 6,265-80 ft., IP 1,100 bbl.

SOUTH ELK BASIN—Park County, July, Continental Oil Co. 1 Goodstein, NE SE SW 20-57n-99w, in Tensleep sand 6,971-7,146 ft., IP 594 bbl.

ZIMMERMAN BUTTE—Hot Springs County, November, Pacific Western Oil Co. et al 1 Pacific Western, NW SW SW 36-44n-93w, in Embar sand 4,310-32 ft., IP 14 bbl. per hour.

NEW PAYS

GOLDEN EAGLE—Hot Springs County, February, Pioneer Oil Corp. 2 On Time OPC, SW SE 12-45n-97w, in Dakota sand 7,165-7,202 ft., IP 80 bbl.

EXTENSIONS

EAST LANCE CREEK—Niobrara County, October, Continental Oil Co. 1-B Leach, NW NW SE 20-36n-64w, in Dakota sand 3,890-3,945 ft., IP 144 bbl. in 8 hours.

GRASS CREEK — Hot Springs County, January, Husky Refining Co. 1 Kinney-Coastal, SW SW SW 20-46n-98w, in Embar sand 4,170-4,230 ft., IP 125 bbl.

HALF MOON—Park County, April, Husky Refining Co. 2 Morrison, NW SE SW 23-51n-102w, in Embar sand 3,317-3,400 ft., IP 175 bbl.

LITTLE BUFFALO BASIN—Park County, May, Stanolind Oil & Gas Co. 6 Unit, NE NE NW 1-47n-102w, in Tensleep sand 4,915-75 ft., IP 130 bbl.

LOST SOLDIER — Sweetwater County, March, Sharples Corp. 1 Government, NE NE NW 14-26n-90w, in Tensleep sand 5,940-6,017 ft., IP 540 bbl.

NORTH LA BARGE—Sublette County, August, Western Oil Co. 4-9 Government, NW SW NW 9-27n-113w, in Tertiary sand, TD 2,436 ft., IP 3 bbl.

STEAMBOAT BUTTE — Fremont County, January, British-American Oil Co. 3-C Tribal, NE SW SW 29-4n-1w, in Tensleep sand 6,977-7,104 ft., IP 80 bbl.

WINKELMAN—Fremont County, September, Stanolind Oil & Gas Co. 7 Tribal, SW SW SE 18-2n-1w, in Tensleep sand 3,090-3,340 ft., IP 16 bbl. per hour.

MONTANA

BRADY—Pondera County, January, Texas Co. 1 Weikum, NW NW NW 27-27n-2w, in Sunburst sand 1,497-1,517 ft., IP 12 bbl.

DEVON—Toole County, January, Texas Co. 1 Ekholt, NW SW NW 3-33n-1e, in Ellis-, Madison contact 1,655-56 ft., IP 50 bbl.

EAST HIGH GRAVITY—Toole County, April, Consolidated Gas Co. 1 Gillespie, SE NW SE 15-35n-4w, in Ellis sand 2,316-18 ft., IP 360 bbl.

NORTH CUT BANK—Glacier County, October, Carter Oil Co. 1 Brindley, C NE NE 12-36n-6w, in Madison 3,084-87 ft., IP 122 bbl.

UTOPIA — Liberty County, November, Texas Co. 1 Government, NW SE SW 15-33n-4e, in Madison 2,503-44 ft., IP 20 bbl.

NEW PAYS

CAT CREEK—Petroleum County, October, Dave Schrock 1 Fifer, NW NW NW 21-15n-30e, in Ellis sand 1,392-94 ft., IP 300 bbl.

EXTENSIONS

BRADY—Pondera County, March, Texas Co. 3 Schlepp, NW SE SE 21-27n-2w, in Sunburst sand 1,462-96 ft., IP 7 bbl.; Texas Co. 1 McCann, May, SE NW SE 21-27n-2w, Sunburst sand 1,468-96 ft., IP 7 bbl.

DEVON—Toole County, April, Texas Co. 1 Weir, NW SE NE 4-33n-1e, Ellis-Madison contact 1,645-47 ft., IP 80 bbl.

PONDERA—Pondera County, June, Triway Oil Co. 9 Copeley, NE NE NE 15-27n-4w, Ellis-Madison contact 1,926-30 ft., IP 100 bbl.

COLORADO

NEW PAYS

POWDER WASH—Moffat County, July, Mountain Fuel Supply Co. 3 Allen, SE SE NW 33-12n-97w, new gas sand 4,525-36 ft.

EXTENSIONS

RANGELY—Rio Blanco County, June, Stanolind Oil & Gas Co. 1 Rector, CEL NE SE 34-2n-102w, Weber sand 5,629-6,242 ft., IP 365 bbl., 33° gravity.

NORTHWEST NEW MEXICO

NEW PAYS

BARKER CREEK—Gas field—San Juan County, March, Southern Union Producing Co. 9 Barker Creek, SE SE NW 21-32n-14w, Ouray 8,400-8,500 ft. and 8,550-70 ft., IP 60,000,000 cu. ft.

EXTENSIONS

BARKER CREEK—Gas field—San Juan County, October, Southern Union Producing Co. 11 Barker Creek, SE NW 16-32n-14w, Pennsylvanian 9,000-04 ft., IP unknown.

FULCHER BASIN—Gas field—San Juan County, October, Maddox-Sievert 1 Hargis, NE SW NE 33-30n-12w, Picture Cliff 1,685 ft., IP unknown.

KUTZ Canyon—Gas field—San Juan County, August, Southern Union Producing Co. 1 Coin, SW SW 15-28n-10w, Farmington 1,350-95 ft., IP unknown.

WEST TEXAS

ALEXANDER—Terry County, May, Leland Fikes & John Murchinson 1 C. R. Alexander, Section 18, Block K, PSL Survey, 6 miles southwest Slaughter field, San Andres 5,088-5,157 ft., IP 150 bbl.

ANTON—Lamb County, January, Humble Oil & Refining Co. 1 J. A. Jackson, Section 119, Block A, R. M. Thompson Survey, 14 miles southeast Littlefield, Wichita 6,645-60 ft., IP 248 bbl.

BEDFORD-DEVONIAN—Andrews County, November, Shell Oil Co., Inc., and The Texas Co. 1 Ratliff & Bedford, Section 4, Block 73, PSL Survey, 5 miles northwest Three Bar pool, Devonian 8,777-9,150 ft., IP 1,105 bbl.

BEDFORD-ELLENBURGER — Andrews County, November, Shell Oil Co., Inc., and The Texas Co. 1 Ratliff & Bedford, Section 4, Block 73, PSL Survey, 5 miles northwest Three Bar pool, Ellenburger 11,018-32 ft., IP 1,214 bbl.

BLOCK 31—Crane County, November, Atlantic Refining Co. 1-A University, Section 33, Block 31, University lands, 7 miles northwest Crane, Devonian 8,512-69, 8,835-52, 8,860-69 ft., IP 776 bbl., Ellenburger 10,291-458 ft., IP 414 bbl.

BRAHANEY—Yoakum County, June, Dunigan & Brahaney 1 S. W. Hodges, Section 446, Block D, John H. Gibson Survey, 4 miles west Plains, San Andres 5,272-5,301 ft., IP 76 bbl.

CRAVENS — Lubbock County, February, Seaboard & Stanolind 1 L. M. Cravens, Section 6, Block D, L&SV Survey, 11 miles north Lubbock, Wichita 6,050-6,170 ft., IP 136 bbl. day.

DOLLAR HIDE—Andrews County, August, Magnolia Petroleum Co. 1 E. P. Cowden, Section 7, Block A-55, PSL Survey, Devonian 7,900-60 ft., IP 244 bbl.

EDEN — Concho County, October, Eltex, Ltd., 1 E. L. Martin, Section 6, Wm. Hughes Survey, 4 miles northwest of Eden, Marble Falls 3,801-09 ft., IP 648 bbl.

EDWARDS—Ward County, February, Gulf Oil Corp. 2-B-T John & Charles Edwards, Section 31, Block B-19, PSL Survey, 2½ miles southeast Monahans, Holt 4,385-4,562 ft., IP 61 bbl.

JONES RANCH—Gaines County, November, Amerada Petroleum Corp. 1-A Jones Section 3, Block A-6, PSL Survey, 4½ miles southwest Wasson field, Devonian 11,181-284 and 11,380-422 ft., IP 1,014 bbl.

LANDON—Cochran County, July, Stanolind Oil & Gas Co. 1 J. F. Edwards, Section 13, Block L, PSL Survey, 11½ miles SW Rhodes pool, San Andres 5,025-80 ft., IP 387 bbl.

LEONARD—Runnels County, April, O. D. Leonard 1 Livingston, Section 110, J. Parramore Survey, 13 miles northeast Ballinger, Cross Cut 3,015-30 ft., IP 206 bbl.

LEVELLAND—Hockley County, February, The Texas Co. 1 L. Y. P. Montgomery, Labor 19, League 70, Val Verde CSL, 6 miles north Slaughter field, San Andres 4,765-80 ft., IP 95 bbl.

MARTIN—Andrews County, March, Sun Oil Co. 1 Martin, Section 17, Block A-41, PSL Survey, 15 miles southwest Andrews, Clear Fork 6,850-7,036 ft., IP 301 bbl.

MIDLAND—Midland County, November, Humble Oil & Refining Co. 1 Buchanan, W. M. Baldridge Survey No. 32, 9 miles southeast Midland, Strawn 10,374-390 ft., IP 270 bbl.

TANKERSLEY—Irion County, July, Shell Oil Co., Inc., 2 Fayette Tankersley, Section 10, GC&SF Survey, 10½ miles southeast Mertzon, Strawn 7,195-7,200 ft., IP 96 bbl.

THREE BAR — Andrews County, March, Stanolind Oil & Gas Co. 1-D University, Section 8, Block 11, University, 5 miles northwest Embar field, Devonian 8,300-50 ft., IP 289 bbl.

UPLAND—Upton County, July, Humble Oil & Refining Co. 1 J. M. Parrott et al, Section 3, EL&RR Survey, 18 miles northeast Rankin, Pennsylvanian 9,410-9,860 ft., IP 5 bbl.

UNNAMED—Concho, May, Northern Ordnance 1 Mrs. Leta Sorrell, Section 206, Eliza Kempner Survey, ¾ mile northwest Eden, Pennsylvanian 3,295-3,304 ft., IP 20,500,000 cu. ft. gas, 51 bbl. distillate per million feet of gas.

UNNAMED—Crane County, October, Magnolia 1-B Tucker, Section 25, Block 1, H&TC Survey, 5 miles north Imperial, Waddell 5,785-5,805 ft., IP 19 bbl.

UNNAMED—Pecos County, August, R. G. Patillo 1 Thornton Davis, Section 105, Block 8, H&GN Survey, 5 miles northwest Pecos Valley, Yates 1,559-68 ft., IP 70 bbl.

NEW PAYS

BEDDO—Runnels County, February, Cherry & Kidd 1 F. H. Brevard, Subdivision 28, Domingo Diaz Survey No. 532, Palo Pinto 3,536-48 ft., IP 577 bbl.

CROSSETT—Crane County, January, The Texas Co. 3-B Hobbs, Section 33, Block 35, H&TC Survey, Holt 3,190-3,220 ft., IP 221 bbl.

FULLERTON — Andrews County, May, Chalmette Oil Corp. 1 Lake Shore Corp., Section 24, Block A-26, PSL Survey, San Andres 4,550-4,767 ft., IP 40 bbl.

FULLERTON—Andrews County, December, Fullerton Oil Co. 322-A H. M. Wilson, Section 16, Block A-32, PSL Survey, Ellenburger 9,867-9,940 ft., IP 562 bbl.

KEYSTONE—Winkler County, June, Sun Oil Co. 2 Keystone, Section 4, Block 77, PSL Survey, Silurian 8,460-8,594 ft., IP 63 bbl.

MARTIN — Andrews County, November, Humble Oil & Refining Co. 1 J. E. Parker, Section 24, Block A-41, PSL Survey, McKee 8,700-50 and 8,775-90 ft., IP 578 bbl.

MONAHANS—Ward County, August, Shell Oil Co., Inc., 6 Sealy Smith, Section 37, Block A, G&MMB&A Survey, Holt 4,730-5,020 ft., IP 481 bbl.

TODD DEEP—Crockett County, February, Amerada Petroleum Corp. 7-A Todd, Section 25, Block WX, GC&SF Survey, Ellenburger 6,232-6,318 ft., IP 2,291 bbl.

TXL—Ector County, May, The Shell Oil Co., Inc., 1-A Thomas, Section 8, Block 45, T-1-S, T&P Survey, Ellenburger 9,705-9,852 ft., IP 1,547 bbl.

WHEELER—Winkler County, March, Sun Oil Co. 1 R. A. Wheeler, Section 13, Block B-27, PSL Survey, Devonian 8,540-90 ft., IP 371 bbl.

EXTENSIONS

DEAN—Cochran County, October, Texas Gulf Production Co. 1 Slaughter, League 113, Potter CSL Survey, San Andres 5,010-63 ft., IP 361 bbl.

FORT STOCKTON—Pecos County, March, The Texas Co. 1 C. R. Hart, Section 2, Block 114, GC&SF Survey, Yates 2,847-74 ft., IP 106 bbl.

FORT STOCKTON — Pecos County, August, The Texas Co. 1 W. A. Martin, Section 14, Block 146, T&StL Survey, Yates 2,873-2,955 ft., IP 52 bbl.

FORT STOCKTON—Pecos County, April, The Texas Co. 1 Ernest Riggs, Section 8, Block 146, T&StL Survey, Yates 2,884-2,903 ft., IP 169 bbl.

FULLERTON — Andrews County, December, Mid-Continent Petroleum Corp. 1-15 University, Section 42, Block 13, University Lands, Devonian 8,590-8,650 ft., IP 1,427 bbl.

FULLERTON — Andrews County, April, Stanolind Oil & Gas Co. 1-P University, Section 44, Block 13, University Lands, Devonian 8,750-70 ft., IP 439 bbl.

GARZA—Garza County, April, Karcher & Brown 1-C Post Est., Section 7, Block 5, K. Aycock Survey, San Andres 2,878-2,936 ft., IP 160 bbl.

GARZA—Garza County, March, Kenneth Murchison 1 Post Est., Section 7, Block 5, K. Aycock Survey, San Andres 2,820-55 ft., IP 80 bbl.

GARZA—Garza County, December, J. T. O'Neal 1 K. Stoker, Section 1238, Block 5, K. Aycock Survey, San Andres 2,882-88 ft., IP 104 bbl.

LEVELLAND — Hockley County, December, Magnolia Petroleum Co. 1 W. T. Coble, Tract 34, League 68, Hardeman CSL Survey, San Andres 4,761-4,849 ft., IP 6 bbl.

LEVELLAND—Hockley County, June, The Texas Co. 1-A W. T. Coble, Labor 20, League 67, Hardeman CSL Survey, San Andres, 4,760-4,836 ft., IP 97 bbl.

LEVELLAND—Hockley County, May, The Texas Co. 1-B W. T. Coble, Labor 19, League 67, Hardeman CSL Survey, San Andres 4,733-4,829 ft., IP 21 bbl.

LEVELLAND — Hockley County, December, The Texas Co. 1 Ira DeLoache, Labor 21, League 73, Reeves CSL Survey, San Andres 4,740-4,800 ft., IP 15 bbl.

MABEE—Martin County, August, Mabee Oil & Gas Co. 1-14 J. E. Mabee, Section 14, Block 39, T-2-N, G&MMB&A Survey, San Andres 4,650-4,700 ft., IP 166 bbl.

MASCHO-FUHRMAN — Andrews County, May, DeKalb Agricultural Association, Inc., 1 Lockhart & Brown, Section 15, Block A-42, PSL Survey, San Andres 4,364-4,540 ft., IP 131 bbl.

MASCHO-FUHRMAN — Andrews County, November, Stanolind Oil & Gas Co. Continental Oil Co. 1-R University, Section 5, Block 9, University Lands, Grayburg 4,340-4,466 ft., IP 104 bbl.

PHD—Garza County, March, Honolulu & Devonian 1 Elmer Hitt, Section 2, Block 1, HE&WT Survey, San Andres 3,513-35 ft., IP 135 bbl.

PHD—Garza County, June, Honolulu & Devonian 1 H. F. Richardson, Section 1282, BS&F Survey, San Andres 3,511-25 ft., IP 83 bbl.

ROBERTSON—Gaines County, March, The Texas Co. 2 Robertson, Section 21, Block A-24, PSL Survey, Glorietta 5,900-68 ft., IP 363 bbl.

RUSSELL—Gaines County, May, Shell Oil Co., Inc., William Pierson, Section 452, Block G, GCSD&RGNG Survey, Clear Fork 7,285-7,687 ft., IP 105 bbl.

SLAUGHTER—Cochran County, January, Honolulu Oil Corp. 1-A-9 R. M. Hudson, Section 9, Block P, PSL Survey, San Andres 5,070-5,120 ft., IP 111 bbl.

TXL-DEVONIAN — Ector County, April, Rowan Drilling Co. 1 TXL, Section 29, Block 45, T-1-S, T&P Survey, Devonian 7,826-7,915 ft., IP 2,780 bbl.

TXL-ELLENBURGER — Ector County, June, Phillips Petroleum Co. 1-A TXL, Section 21, Block 45, T-1-S, T&P Survey, Ellenburger 9,680-90 and 9,775-93 ft., IP 1,650 bbl.

UNION-DEEP—Andrews County, January, Union Oil Co. of California 6 Biles, Block A-31, PSL Survey, Tubb 6,950-7,460 ft., IP 50 bbl.

WELCH—Dawson County, January, Richmond Drilling Co. 1 J. W. Nelson et al, Section 34, Block M, ELRR Survey, San Andres 4,805-99 ft., IP 166 bbl.

YELLOWHOUSE—Hockley County, March, Stanolind Oil & Gas Co. 1 Yellowhouse, Labor 2, League 718, State Capitol Lands Survey, San Andres 4,560-82 ft., IP 62 bbl.

SOUTHEASTERN NEW MEXICO

DISCOVERIES

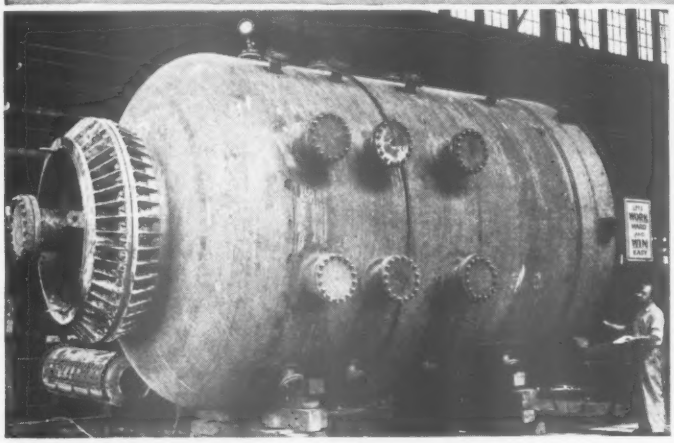
PADDOCK—Lea County, April, Gulf Oil Corp. 1 E. T. Paddock, 1-22s-37e, Glorietta 5,200-30 ft., IP 610 bbl.

YOUNG—Lea County, February, E. J. McCurdy 1 Young, 20-18s-32e, Queen sand 2,743-83 ft., IP 375 bbl.

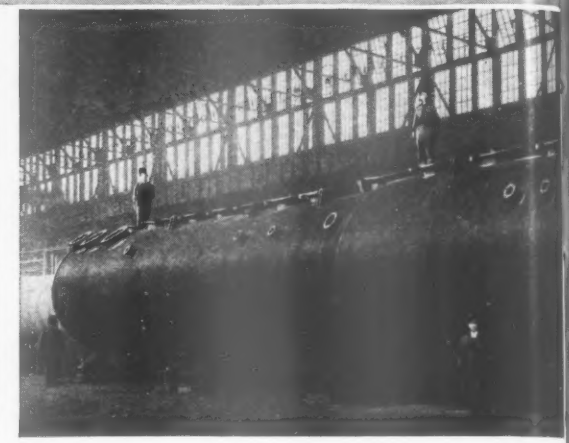
UNNAMED—Lea County, October, C. T. McLaughlin and Cosden Pet. Co. 1 State, 2-17s-32e, San Andres 4,094-4,385 ft., IP 125 bbl.

UNNAMED—Lea County, June, Skelly 2 Johnson, 2-23s-37e, Grayburg 3,585-3,676 ft., IP 648 bbl.

You Name It-We

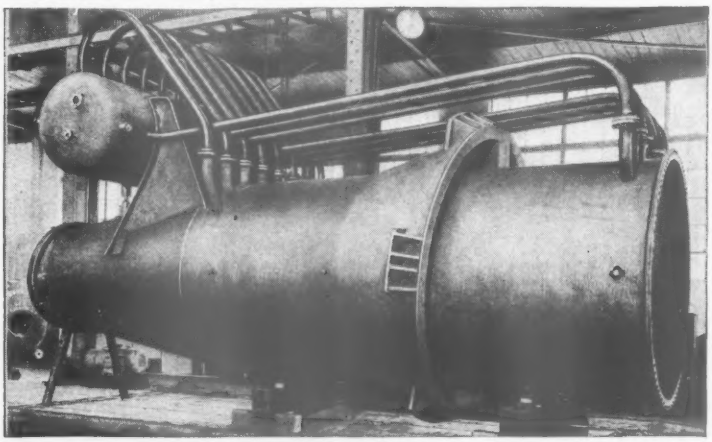


↑ Catalyst chamber: weight 56,000 lbs., 12'-0" I.D., 13'-0" Tangent to Tangent, overall length 22'-11".

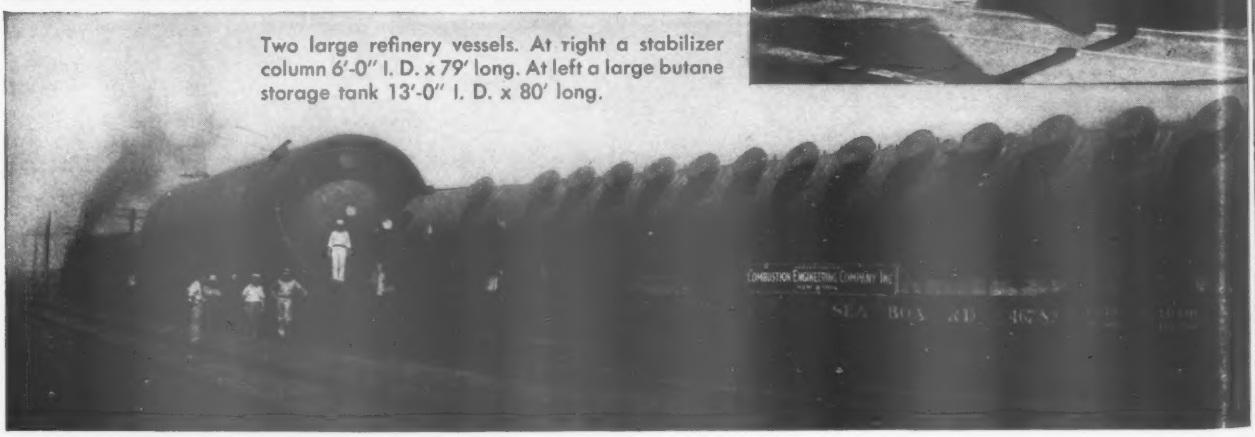


Contactor for aviation gasoline manufacture. ↓ 95½" O. D. x 21'-6" long.

A waste heat boiler of special design, one of many built for high octane gas plants. ↓



Two large refinery vessels. At right a stabilizer column 6'-0" I. D. x 79' long. At left a large butane storage tank 13'-0" I. D. x 80' long.



re.

NEW PAYS

DRINKARD-YESO—Lea County, July, The Texas Co. 1 Blinebry, 19-22s-38e, Clear Fork 5,580-5,625 ft., IP 11,700,000 cu. ft. gas.

PADDOCK—Lea County, November, N. G. Penrose 1 Jones, 6-22s-38e, Yeso 7,040-7,160 ft., IP 187 bbl.

PENROSE-SKELLY — Lea County, September, Neville G. Penrose, Inc. 1 Penrose, 9-22s-37e, Ellenburger 8,059-89 and 8,100-40 ft., IP 667 bbl.

PENROSE-SKELLY—Lea County, November, Amerada 1-PB State, 16-23s-37e, Glorietta 5,015-59 ft., IP 155 bbl.

EXTENSIONS

CAPROCK—Lea County, March, Geo. P. Livermore, Inc., 1 Williams, 7-13s-32e, 1¾ miles south Caprock pool, Queen 3,044-59 ft., IP 12 bbl.

DRINKARD-YESO — Lea County, May, Gulf Oil Corp. 1 State-Andrews, 32-22s-38e, 1½ miles southeast deep Penrose pool, Wichita-Albany 6,930-7,000 ft., IP 550 bbl.

DRINKARD-YESO — Lea County, April, Samedan Oil Co. 1 Boyd, 23-22s-37e, 2 miles northwest Drinkard-Yeso deep pool discovery, Yeso 6,370-95 and 6,415-40 ft., IP 192 bbl.

RUSSELL — Eddy County, April Nipper & McKinney 1 State, 21-20s-28e, 2 miles northwest Russell pool, Yates 665-750 ft., 3,600,000 cu. ft. gas.

NORTH AND WEST CENTRAL TEXAS

ALMON — Cooke County, August, Fred Snuggs 1 L. M. Almon, J. M. Randolph Survey A-868, 3½ miles east and 1 mile north Gainesville, Strawn 2,898-2,907 ft. IP 89 bbl.

BELCHERVILLE—Montague, October, Venmex Oil Co. of Texas 1 A. E. Beakley, Block 21, M. Garnett Survey, ½ mile northeast Belcherville, Caddo 5,346-56 ft., IP 930 bbl.

BENSON — Archer County, May, L. T. Burns 1-E Benson Est., Section 1808, TE&L Survey A-503, 7½ miles northeast Olney, Caddo 4,593-4,699 ft., IP 70 bbl.

BRAVOUSETT—Young County, June, Kerlyn Oil Co. 1 Bravousett, Ann Wood Survey, 5 miles north Loving, Mississippian 5,041-48 ft., IP 1,600 bbl.

BRYAN—Young, August, Kerlyn Oil Co. 1 J. W. Bryan, Section 1902, TE&L Survey, 3 miles northeast Jean, Caddo 4,373-81 ft., IP 439 bbl.

CHERRYHOMES—Jack County, March, Panhandle Producing & Refining Co. 1 Cherryhomes, R. S. Gorder Survey A-126, 5 miles southeast Jacksboro, Strawn 5,035-50 ft., IP 664 bbl.

COOPER—Jones County, July, S. A. Roberts 1 O. J. Cooper, Section 29, Block 15, T&P Survey, 4 miles northeast Hawley, Swastike 2,327-35 ft., IP 228 bbl.

CRAIN—Young County, October, L. T. Burns 1 J. H. Crain, Section 169, TE&L Survey, 1 mile west and 2 miles south Olney, Mississippian 4,935-55 ft., IP 540 bbl.

GRAHAM-TANKERSLEY — Young County, October, Section 741, TE&L Survey, 7 miles SW Newcastle, Strawn 3,397-3,425, IP 25 bbl.

JOHNSON—Montague County, July, W. B. Omohundro and Continental Oil Co. 1 Johnson, Block 6, Limestone CSL, 3½ miles northeast Stoneburg pool, Bend 5,996-6,018 ft., IP 1,036 bbl.

KINDER—Jack County, February, James Stewart 1-D J. W. Kinder, B. H. Epperson Survey A-208, 7 miles south Bryson, Marble Falls 4,204-26 ft., IP 90 bbl.

McANALLY—Jack County, August, Roeser & Pendleton 1 D. C. McAnally, Section 18, Block 2, Henderson CSL A-275, ½ mile northeast Joplin, Bend 4,430-46 ft., IP 270 bbl.

MARTIN—Jones County, March, Primo Oil Co. 1 Mrs. Mary A. Martin, Block 13, J. Weihl Survey, 3 miles south Lueders, Bluff Creek 1,627-38 ft., IP 115 bbl. day.

NATIONAL — Wilbarger County, June, National Associated Oil Co. 1 Sam Kelly, Section 30, Block 13, H&TC Survey, 1 mile east Harrold, Ellenburger 4,125-45 ft., IP 130 bbl.

NICHOLS — Archer County, September, Manning & Brown 1 A. P. Nichols, Section 50 Lot 2, ATNCL Survey, 2 miles west and 3 miles north Ruff, Ellenburger 5,486-5,543 ft., IP 407 bbl.

RICHARDSON—Archer County, September, Robertson Drilling Co. 1 J. T. Richardson, Lot 14, Jonathan Scott Survey, 5 miles north and 3 miles west Olney, Caddo 4,702-10 ft., IP 1,688 bbl.

SWANN—Jones County, December, Rhodes Drilling Co. 1 W. D. Swann, I. Miley Survey No. 281, 12 miles northwest Merkel, Saddle Creek 2,760-71 ft., IP 499 bbl.

WOOD—Clay County, January, Anderson-Prichard 1-A R. O. Wood, Section 12, MEP&P Survey, 7 miles south and 1 mile west Petrolia, Caddo 5,935-40 ft., IP 379 bbl.

UNNAMED—Archer County, P. C. Burns 1 G. F. Parsons, Block 1, EL&RR Survey, 5½ miles north and 1½ miles east Megargel, Cisco 1,488-95 ft., IP 10 bbl.

UNNAMED — Archer County, January, Gray & Seaboard 1 S. M. Gose et al, Section 8, ATNCL Subdivision, 6½ miles southwest Holliday, 1,603-20 ft., IP 15 bbl.

UNNAMED — Clay County, May, Continental Oil Co. 1 Thomas, Block 34, Freestone CSL, 2 miles north Newport, Strawn 4,130-50 ft., IP 33 bbl.

UNNAMED — Clay County, September, W. H. Hammon et al 1 H. W. Bryans, Mary F. Sims Survey No. 1, 11 miles northeast Wichita Falls, Caddo 5,862-92 ft., IP 20 bbl.

UNNAMED—Coleman County, May, Central Texas Gas Co. 1 F. E. Strange, J. E. Milton Survey, 6 miles southwest Santa Anna, Marble Falls 2,063-92 ft., IP 8,000,000 cu. ft. gas.

UNNAMED — Coleman County, June, W. W. Harvey et al, 1 McCord, J. W. Weeks Survey No. 159, Fry 3,430-62 ft., IP 4,160,000 cu. ft. gas.

UNNAMED—Coleman County, July, Hunter & Hunter 1 T. J. Hudson, D. F. Roddan Survey No. 42, 2 miles northwest Coker field, Gray 3,609-29 ft., IP 65 bbl.

UNNAMED—Coleman County, June, White & Newman 1 C. L. Gunn, Section 40, H&B Survey, 3 miles southeast Novice, Jennings, 3,349-75 ft., IP 12 bbl.

UNNAMED—Cooke County, July, Douglas Helms 1 Lee Blocker, J. Rodriquez Survey A-880, 1½ miles southeast Myra, Strawn 1,588-94 ft., IP 31 bbl.

UNNAMED—Cooke County, June, Hollandsworth Drilling Co. 1 W. A. Mathews, Robert Ekey Survey, 3½ miles southwest Myra, Strawn, 1,543-48 ft., IP 80 bbl.

UNNAMED—Jack County, July, Continental Oil Co. 1 S. F. Borden, E. S. Wilson Survey, 7 miles southeast Newport, Simpson 6,720-6,860 ft., IP 1,026 bbl.

UNNAMED—Jack County, October, Hanlon-Buchanan 1 Whittsitt, Section 2, Wm. McElroy Survey, 5 miles east and 2 miles south Antelope, Caddo 5,173-81 ft., IP 40 bbl.

UNNAMED — Jones County, September, Crown Central Petroleum Corp. 1 R. A. Stephenson, Lot 4, J. Winters Survey No. 138, 1 mile southwest Hodges, Gunsight 2,575-79, IP 252 bbl.

UNNAMED — Jones County, November, Eastland Oil Co. 1 W. L. Chittenden, Section 19, League 335, Louis Kratz, 8 miles northwest Anson, King 3,018-25 ft., IP 69 bbl.

UNNAMED—Jones County, January, Hung Oil Co. 2 T. J. Amason, Subdivision 2, S. Jones Survey, 3 miles northeast Noodle, Canyon 3,595-3,606 ft., IP 126 bbl.

UNNAMED—Jones County, January, The Texas Co. 1 A. M. McCright, Stephens Scallorns Survey, No. 280, 5 miles west Noodle, Noodle Creek 2,536-2,546 ft., IP 42 bbl.

UNNAMED—Jones County, March, M. M. Travis et al 2 Nobles, B. Travino Survey No. 190, Flippen 1,937-48 ft., IP 4 bbl.

UNNAMED — Montague, January, The Texas Co. 1 L. A. Hutson, G. W. Fletcher Survey A-208, 15 miles northeast Montague, Strawn 1,892-94 ft., IP 78 bbl.

UNNAMED—Shackelford County, February, Craighead & Montgomery 1 Clausell Est., TE&L Survey No. 587, 3 miles northeast Albany, Fry 528-49 ft., IP 22 bbl.

UNNAMED—Shackelford County, February, Eltex 1 G. R. Davis, Section 57, Block 13, T&P Survey, 10 miles south Budmathews, Hyde 1,808-12, IP 3,400,000 cu. ft. gas.

UNNAMED — Shackelford County, May, A. M. Hagan et al 1 J. H. Nail, Section 126, ETRR Survey, 18 miles north Albany, Cook 1,315-20 ft., IP 64 bbl.

UNNAMED — Shackelford County, May, H. P. Key 1 W. H. Green, Section 47, Block 11, T&P Survey, 8 miles southwest Albany, Strawn 3,010-17 ft., IP 99 bbl.

UNNAMED — Stephens County, January, The Mudge Oil Co. 1 W. E. Adams, Section 2955, TE&L Survey, 12 miles southwest Breckenridge, Marble Falls 3,870-3,900 ft., IP 312,000 cu. ft. gas.

UNNAMED — Wichita County, January, R. H. King et al 1 T. B. Michie, L. Neatherly Survey A-240, 6 miles east Kemp City, KMA 3,930-90 ft., IP 70 bbl.

UNNAMED — Young County, June, Fain-McGaha 2 H. O. Prideaux, A. Rohus Survey A-2288, 2 miles NW Markley, Strawn 3,622-37 ft., IP 402 bbl.

UNNAMED — Young County, December, Fred M. Manning, Inc., 1 M. K. Graham, Section 1, J. Poitevent Survey A-227, 3 miles east and 5 miles south Loving, Strawn 3,075-90 ft., IP 100 bbl.

UNNAMED — Young County, December, Robertson Drilling Co. 1 N. Burch et al, Section 466, TE&L Survey, 3 miles northwest Graham, Strawn 3,794-3,814 ft., IP 46 bbl.

UNNAMED — Young County, January, R. J. Watson et al 1 J. H. Choate, Section 254, TE&L Survey, 7 miles south Olney, Cisco 610-20 ft., IP 6 bbl.

NEW PAYS

CADDO—Stephens, April, American Manufacturing Co. 1 R. M. Rogers, Section 27, Block 5, T&P Survey, Ellenburger 4,470-4,513 ft., IP 92 bbl.

EWALT — Throckmorton, January, Panhandle Refining Co. & Anderson-Prichard 2 W. B. Ewalt, Section 2185, TE&L Survey, Mississippian 4,802-4,807 ft., IP 50 bbl.

FARMER-GARVEY—Standard Oil Co. of Ohio 2 J. R. Garvey, Section 1, BBB&C Survey A-35, Mississippian 5,186-5,216 ft., IP 465 bbl.

FLEMING-GRAHAM—Young County, January, Fleming Oil Co. 4 M. K. Graham, Section 2912, TE&L Survey, Cisco 490-95 ft., IP 5,000,000 cu. ft. gas.

FLEMING-GRAHAM—Young County, October, Fleming Oil Co. 1 R. T. Sweeney, Section 2917, TE&L Survey, Strawn 2,880-90 ft., IP 6 bbl.

HARROLD — Wilbarger County, March, Big 6 Oil Co. 1 Schlaffke & Morris, Section 3, Block 14, H&TC Survey, Mississippian 4,830-74 ft., IP 63 bbl.

HUNDLEY — Montague County, January, Continental Oil Co. 1-B J. M. Hundley, D. Martindale Survey A-465, Strawn 5,688-5,726 ft., IP 25 bbl.

LEERAY—Stephens County, January, Woodley Petroleum Co. 1-B F. W. Thorpe, Section 456, Mississippian 3,745-3,820 ft., IP 45 bbl.

ROSS—Clay County, January, Continental Oil Co. 1 Annie T. Morris, W. C. Davis Survey A-119, Strawn 4,754-95 ft., IP 30 bbl.

SIVELLS BEND—Cooke County, January, The Texas Co. 1 Isham Beasley, John McKerley Survey A-639, Strawn 6,817-62 ft., IP 456 bbl.

VOGTSBERGER — Archer County, April, Phillips Petroleum Co. 1 O. Bullington, M. Doyle Survey A-120, Ellenburger 5,223-5,415 ft., IP 680 bbl.

EXTENSIONS

ALEXANDER—Jones County, July, R. H. Roark & L. F. Hooker, J. H. Warfield Survey No. 10, Fry 1,410-24 ft., IP 40 bbl.

ALMON—Cooke County, October, Owen W. Murray 1 A. T. Gregory, J. M. Randolph Survey A-868, Strawn 3,482-86 ft., IP 141 bbl.

BOWERS—Montague County, April, Nu-Enamel Oil Operating Co. 1 J. T. Langford, Block 47, MEP&P Survey A-532, Strawn, 3,908-16 ft., IP 704 bbl.

DANGLEMAYER—Cooke County, April, R. W. Fair & Sons 4 A. D. Walterscheid, E. Langford Survey A-566, Ellenburger 3,044-47 ft., IP 98 bbl.

EWALT — Throckmorton County, February, James Stewart & Co. 1 J. W. Tharp, Section 3007, TE&L Survey A-729, Caddo 4,260-70 ft., IP 171 bbl.

HENDERSON — Clay County, February, Lewis Breeden 1 Pat Barry, Section 2626, TE&L Survey A-485, Strawn 3,153-72 ft., IP 248 bbl.

HILDRETH — Montague County, September, A. R. Dillard et al 1 Dr. J. T. Lawson, N. Kimbro Survey A-405, Caddo 5,992-6,010 ft., IP 1,846 bbl.

HILDRETH—Montague County, October, Benmex et al 1 Wm. Fay Kingsbury, B. Anibal Survey A-1058, Caddo 6,030-62 ft., IP 1,609 bbl.

JACKSON—Jack County, February, Hanlon-Buchanan, Inc., 1 J. M. Bloodworth, J. B. Irvine Survey A-312, Strawn 3,459-61 ft., IP 66 bbl.

JACKSON—Jack County, February, Hanlon-Buchanan 1 J. H. Shown, J. B. Irvine Survey A-312, Strawn 3,471-78 ft., IP 62 bbl.

MADDEN—Wichita County, April, Consolidated Oil Co. 1 Payne-Jones, BBB&C Survey A-35, KMA 4,194-4,275 ft., IP 66 bbl.

MADDEN — Wichita County, September, W. H. Hammon and Hanlon-Buchanan 1 T. R. Boone, Section 1, Parkers Subdivision, SPRR Survey A-264, KMA 4,167-4,210 ft., IP 1,223 bbl.

SIVELLS BEND — Cooke County, July, Sun Oil Co. 1 Mabel Field, M. J. Eason Survey, Strawn 6,670-82 ft., IP 244 bbl.

SOUTHERLAND—Clay County, February, L. T. Burns 5 A. L. Browning, Block 70, J. H. Belcher Survey A-743, Strawn 4,048-78 ft., IP 51 bbl.

WEST—Wichita County, February, Continental Oil Co. 1 Mae Johnson, G. W. Scott Survey A-254, Strawn 4,255-69 ft., IP 209 bbl.

WOLF—Jack County, January, Paul P. Steed et al 1 Nannie E. Ware, Section 3350, TE&L Survey, Caddo 4,455-72 ft., IP 112 bbl.

UNNAMED — Coleman County, February, Cornelius Kroll 2 W. O. Starnes, Section 2, Block 1, GH&H Survey, Morris 2,002-12 ft., IP 80 bbl.

UNNAMED—Taylor County, January, The Texas Co. 1-D Henry Sayles, Jr., Subdivision No. 10, W. R. Willis Survey, Flippen 2,296-2,310 ft., IP 21 bbl.

UNNAMED — Young County, February, Maguire Ind., Inc., 1 M. Berndardt, Section 1474, TE&L Survey A-900, Caddo 4,398-4,431 ft., IP 168 bbl.

UNNAMED — Young County, February, Maguire Ind., Inc., 1-B B. W. King, Section 455, TE&L Survey, Mississippian 4,783-94 ft., IP 331 bbl.

SOUTH CENTRAL TEXAS

CARRIZO PARK — Dimmit County, November, Humble Oil and Refining Co. 1 H. S. Davis, in T&NO Survey 15, Lot 6, Block 1, Subdivision "A" of Carrizo Park Subdivision, 3½ miles southwest of Carrizo Springs, IP 5,750,000 cu. ft. gas through Bavarros sand, Upper Cretaceous, perforations 2,710-17 ft.

LEONA RIVER—Zavala County, February, The Texas Co. 1 West in E. A. Wolf Survey, Abstract 1202, 9 miles from south and 2 miles from east lines of county, IP 10,000,000 cu. ft. gas open flow, through perforations in Navarro sand 4,224-36 ft.

McKNIGHT RANCH — Dimmit County, September, Calatexia Oil Co. 1 S. E. McKnight, Section 35, Block 13, 4½ miles southwest of Carrizo Springs, IP estimated 1,300,000 cu. ft. gas from Olmos sand perforations 2,638-45 ft.

ORMSBY—Wilson County, April, L. D. Ormsby 1 Williamson Heirs, in M. Contis Survey, 9 miles northeast of Floresville, IP 127 bbl. oil through perforations 5,042-62 ft.

EASTERN TEXAS

FAIRFIELD—Freestone County, February, The Texas Co. 1 McKnight, L. H. Reed Survey, 3 miles southwest Fairfield, Travis Peak 8,232-47 and 8,275-97 ft., IP 14,600,000 cu. ft. gas with 30 bbl. distillate per million feet of gas.

LARUE—Henderson County, January, Lone Star Prod. Co. 1 R. H. Lee, B. C. Walters Survey, 2½ miles north Athens, Bacon 8,196-8,208 ft., IP 262 bbl.

MYRTLE SPRINGS—Van Zandt County, January, Humble Oil & Refining Co. 1 Bruce, J. Saligna Survey, 4 miles south Edgewood, Travis Peak 8,524-44 ft., IP 88 bbl.

TEAGUE—Freestone County, September, The Texas Co. 1 Mrs. Nancy Ham, R. Lawson Survey, 4 miles east and slightly south Teague, Pettit 8,002-18 ft., 13,000,000 cu. ft. gas, 8 bbl. distillate per million cubic feet of gas.

WHELAN—Harrison County, June, D. E. & R. J. Whelan 1 Wm. Peel Est., Betty Humphrey Survey, 2½ miles northwest Harleton, Rodessa 6,776-94 ft., IP 52,000,000 cu. ft. gas, 10.75 bbl. distillate per million cubic feet of gas.

UNNAMED—Harrison County, September, Rogers Lacy 1 Mrs. E. L. Poteet, Betty Humphries Survey, 3 miles north Harleton, Rodessa 6,830-42 ft., IP 57,000,000 cu. ft. gas.

UNNAMED—Harrison County, September, Rogers Lacy 1 J. R. Tutle et al, J. M. Clifton Survey, 3½ miles north Marshall, Pettit 6,472-80 and 6,514-22 ft., IP 800,000 cu. ft. gas, 5 bbl. distillate per million cubic feet of gas.

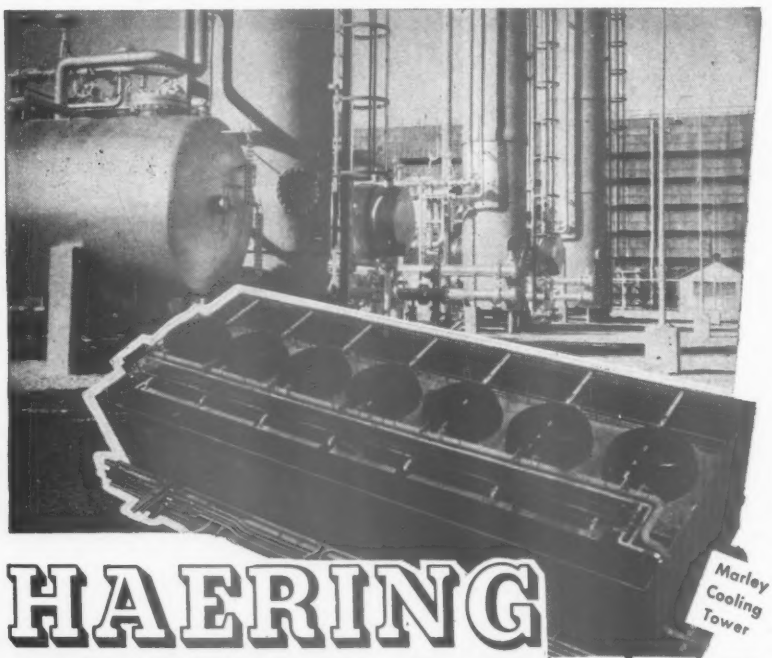
UNNAMED—Rusk County, February, H. C. Owens 1 J. H. Rousseau, Robt. Gilkerson Survey, 4½ miles northeast Minden, Travis Peak 7,382-89 ft., IP 1,650,000 cu. ft. gas, 30 bbl. distillate per million feet of gas.

UNNAMED—Van Zandt County, January, The Texas Co. 1 J. F. Stout, N. T. Dickerson Survey, 2½ miles southwest of Tundra, Rodessa 8,150-58 ft., IP 25 bbl.

NEW PAYS

COKE—Wood County, May, Amerada Pet. Corp. 3 Faulk, James Knight Survey, Young 8,080-8,130 ft., IP 32,000,000 cu. ft. gas, 57 bbl. distillate per million cubic feet gas.

FAIRFIELD—Freestone County, July, The Texas Co. 1 Sneed, B. Green Survey, Wood-



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bine 4,198-4,207 ft., IP 27,000,000 cu. ft. gas, 2 bbl. distillate per million cubic feet of gas.

LONE STAR—Cherokee County, October, G. W. Walker et al 1 P. I. Bowling, W. H. Walker Survey, Nacatoch 3,348-84 ft., IP 169 bbl.

EXTENSIONS

CARTHAGE — Panola County, February, Arkansas-Louisiana Gas Co. 1 Z. L. Daniel, Matthew Parker Survey A-527, Upper Pettit 5,901-28 ft., Lower Pettit 6,054-6,115 ft., IP 10,600,000 cu. ft. gas.

PICKTON — Hopkins County, February, Humble Oil & Refining Co. 1 Nichols, Antonio Lazarin Survey, Bacon 7,895-7,905 ft., IP 460 bbl.

PICKTON — Hopkins County, February, Hunt Oil Co. 1 M. C. Spigner, Jonathan Fowler Survey, Bacon 7,892-7,903 ft., IF 389 bbl.

SOUTH TEXAS

ECHOLS—Zapata County, November, Geo. H. Echols 1 T. Dominguez, Porcion 31, Share "A," 9 miles northeast of Zapata, IP gas well, shut in, perforations 1,948-68 ft.

GORMAC—Duval County, March, J. W. Gorman and McDermott 2 J. F. Welder Heirs, in J. Poitevent Survey 211, 6 miles northeast of Freer, IP 107 bbl. from Loma Novia perforations 2,470-80 ft.

IRVING—Starr County, January, George Irving 1 M. M. Garcia, Porcion 90, Tract 215, 35 miles northeast of Rio Grande City, IP 57,000,000 cu. ft. gas from Frio perforations 3,288-92 ft.

LEFEVRE — Jim Hogg County, January, F. B. LeFevre 1 A. Martinez et al, in Los Animas Grant, Block 91, 12 miles southeast of Hebbronville, IP pump 10 bbl. oil and 4 bbl. water, through open hole 1,767-73 ft., in Jackson sand.

McDERMOTT — Zapata County, April, Humble Oil and Refining Co. 1 Juana Y. McDermott, Sernardo Gutierrez Survey, Porcion 14, 25 miles north of Roma, 2 miles north of Lopeno field, IP 5 bbl. from Queen City perforations 2,609-18 ft.

NORTH CONOCO-DRISCOLL — Duval County, June, Santa Clara Oil Co. 3 Clara Driscoll, in Santa Rosalis Grant, Section 33, 13 miles northwest of Benavides, IP 12,000,000 cu. ft. gas from Catahoula sand perforations 3,160-66 ft.

PARSONS—Starr County, December, The Harrus Syndicate 1 M. M. Garcia, Porcion 91, Block 26, 15 miles northeast of Rio Grande City, IP 124 bbl. from Lower Frio perforations 3,498-3,512 ft.

PATEL — Jim Hogg County, February, S. F. Hurlbut & Gulf States Oil Co. 1 J. Vela Pena, in Survey 589, 25 miles south of Hebbronville, IP estimated 12,000,000 cu. ft. from Vicksburg perforations 3,149-55 ft.

ROSALIA—Duval County, September, Edwin B. Cox & Jake L. Hamon 4 Clara Driscoll, in Santa Rosalia Grant, Section 55, 13 miles west of Benavides, IP gas well, no gage, shut in, from Cockfield perforations 3,170-72 ft.

STAGGS—Webb County, July, Tom Graham & Lucey Petroleum Co. 1 Cole Petroleum Co., M. Arispe Grant, Bruni Townsite, Lot 1, Block 5, IP 102 bbl. through perforations 2,807-12 ft.

UNNAMED — Duval County, February, M. M. Miller & Sons 1 George Herbarger, Santo Flores Grant, Agua Poquita Survey, Block 26, 9 miles south of Benavides, IP 72 bbl. through perforations 5,840-45 ft.

UNNAMED—Starr County, July, W. D. Kennard 1 D. R. Semmes, Porcion 88, 5,400 ft. southeast of Ross Field production, 10 miles north of Rio Grande City, IP 71 bbl. from Frio perforations 2,399-2,420 ft.

UNNAMED—Starr County, June, Panal Oil Co. 1 Lillie May Baird, Porcion 82, Share 4-A, 6 miles north of Rio Grande City, IP 4,800,000 cu. ft. gas, through perforations 1,134-44 ft.

NEW PAYS

AGUA PRIETA—Duval, October, Taylor Refining Co. 5-C E. A. Parr, Survey 297, IP 68 bbl. through perforations 4,200-08 ft.

UPPER GULF COAST TEXAS

ADDICKS—Harris County, February, The Texas Co. 1 Mrs. Madge Hopkins, 3 miles northeast of Addicks, in R. H. Davis Survey, Abstract 225, IP 4 bbl. from Cockfield perforations 7,702-08 ft. Non-commercial.

ALTAIR—Colorado County, July, Superior Oil Co. of California 2-A Mrs. Matilda Tait, in Patrick O'Daugherty Survey, Abstract 167, ½ mile northwest of Altair, IP 432 bbl. from Wilcox, perforations 8,256-68 ft.

ARNIM—Fayette County, March, Continental Oil Co. 1 E. A. Arnim, Jr., et al, J. S. Menefee ⅓ League, 5 miles northwest of Flatonia, IP 80 bbl. from Wilcox, perforations 2,050-59 ft.

BLUE LAKE—Brazoria County, February, Glenn H. McCarthy et al 1 Ida Dudley Wilson et al, in John Bradley Survey, 5½ miles northwest of Angleton, IP 61 bbl. from Upper Frio, perforations 8,702-14 ft.

CEDAR BAYOU FIELD—Chambers County, September, Butcher-Arthur, Inc. 1 First National Bank of Goose Creek, Christian Smith Survey, Abstract 22, 6 miles northeast of Goose Creek, IP 259 bbl. from Frio, perforations 7,181-83 ft.

COLD SPRING FIELD—San Jacinto County, March, Navarro Oil Co. 1 Foster Lumber Co., in Geo. Taylor Survey, IP 74 bbl. from Wilcox 7,883-7,915 ft.

COLUMBUS — Colorado County, September, Cities Service Oil Co. et al 1 John Schobal, James Tumlinson League, Columbus area, IP 124 bbl. from Wilcox, perforations 7,857-59 ft.

CRESCENT — Wharton County, August, Texowell Service & Machine Co. 1-A Sam Hamberger, in WCRR Survey, Abstract 371, Section 65, 4 miles south of Glen Flora, and 8 miles west of Wharton, IP 750,000 cu. ft. gas, Shut-in gas well, Frio perforations 4,448-58 ft.

CYPRESS—Harris County, August, Lenoir M. Josey, Inc. 1-A Lenoir M. Josey, Inc., H&TC Survey, Section 17, 4 miles southeast of Cypress, 1½ miles north of Joyce Richardson field, IP 31,000,000 cu. ft. gas open flow, 17 bbl. condensate per million, from Cockfield perforations 6,955-65 ft. Shut-in gas well.

DOUBLE GUM—Chambers County, May, Sun Oil Co. 1 Elizabeth H. Moore Estate, F. W. Plummer Survey, Abstract 583, 6½ miles northwest of Winnie, IP 41 bbl. through perforations 8,280-85 ft. This well plugged July 1945.

EAST BAY CITY — Matagorda County, April, Skelly Oil Co., Stanolind Oil & Gas and Tide Water Associated Oil Co. 1 G. P. Hardy & Horn, Block 3, I. & G. N. Survey 4, & Henry Goslin Survey 2, 1 mile east of Bay City, IP 48 bbl. from Lower Frio perforations 10,095-123 ft.

EGYPT—Wharton County, May, Hudgins, Ferguson & Hutchins, 1 F. B. & Donald Duncan, Alexander Edgar Survey, Abstract 93, 1 mile northeast of Egypt, IP dry gas from Oakville sand, Miocene, 2,821-28 ft.

ELM BAYOU—Chambers County, April, The Texas Co. 1-A Josephine Connerly, HT&B Survey, Section 92, Abstract 425, 5 miles southwest of Stowell, IP 2,018,000 cu. ft. gas with 15 bbl. condensate per million, from Upper Frio perforations 8,397-8,405 ft.

GILBERT RANCH—Jefferson County, September, Sun Oil Co. 1 Gilbert Estate, John Ricord Survey, Abstract 189.7 miles south of China, IP gas-condensate well, no gage, shutin, from Frio perforations 8,675-90 ft.

HAMEL — Colorado County, September, Skelly Oil Co.-Warren Petroleum Corp. 1 R. Hamel, Richard Dowdy Survey, 9 miles southwest of Columbus, IP 217 bbl. from Wilcox perforations 9,052-69 ft.

HOCKLEY—Harris County, July, Magnolia Petroleum Co. 2 Warren Ranch, Joshua Hudson Survey, 5 miles south of Hockley, IP 204 bbl. from Yegua 6,356-66 ft.

HOPE—Lavaca County, January, Sterling Oil and Refining Co. 1 Seekamp & Palmer, Jonathan Johnson Survey, 12 miles southeast of Yoakum, IP 48 bbl. from Wilcox perforations 7,700-50 ft.

INGLEHART — Colorado County, May, Shell Oil Co. 1 Kyle Estate, J. Grant Survey, Abstract 233, 4 miles north of Garwood, IP 62 bbl. and 3,500,000 cu. ft. gas, from Wilcox perforations 8,780-8,800 ft. Shut-in gas well.

KIRBY, Shallow — Liberty County, April, General Crude Oil Co. 2 C. F. Garbs, M. Duncan Survey, IP 59 bbl. from Miocene 3,478-85 ft.

MATZKE—Wharton County, January, The Texas Co. 1 H. R. Matzke, I&GN Survey, Abstract 244, Section 26, 2 miles southwest of Pierce, IP 48,500,000 cu. ft. gas, from Frio perforations 5,779-84 ft.

MENEFEE — Wharton County, January, Salt Dome Oil Corp. et al 1 Joe Vitera, Henry Mills Survey, Abstract 270, 3 miles northwest of Louise, IP gas well, shut in, no gage, from Frio perforations 5,240-44 ft.

MOODY RANCH—Jackson County, May, Crown Central Petroleum Co. 1 W. L. Moody, Jr., Nancy McFarland Survey, 5 miles southwest of Francitas, IP 77 bbl. from Basal Frio 8,822-40 ft.

NEW ULM — Austin County, September, Sinclair Prairie Oil Co. 1 W. A. Schweke, Tract "A" James Tylee Survey, Abstract 304, 2 miles southeast of New Ulm townsite, IP 117 bbl. from Wilcox perforations 9,155-65 ft.

NORTH CLEVELAND — Liberty County, February, Shell Oil Co., Inc. 1 Grogan Manufacturing Co. et al, Clayton Harper Survey, Abstract 249, North of Cleveland field, IP 294 bbl. from Cockfield perforations 5,782-84 ft.

NORTH DELHI — Harris County, June, Josey-Bruton 1 David Rorick, Jr., Section 31, H&TC Survey, 6 miles northeast of Katy, IP 87 bbl. condensate, 5,874,000 cu. ft. gas through perforations 7,040-48 ft.

OLIVE—Hardin County, December, Pan-American Production Co. 1 Olive Sternenberg Lumber Co., P. S. Watts Survey, Abstract 571, 6 miles north of Kountze, IP 596 bbl. from Wilcox 9,954-10,049 ft. open hole.

ROCK ISLAND—Colorado County, May, Sinclair Prairie Oil Co. 1 Felix Fehrenkamp, SA&MG Survey, Abstract 537, Section 23, 5 miles northeast of Rock Island, IP 6,000,000 cu. ft. gas, shut in, from Wilcox perforations 9,678-95 ft.

SABINE TRAM—Newton County, November, Humble Oil & Refining Co. 1 E. C. Hankamer et al, J. B. Smyth Survey, Abstract 790, 12½ miles southeast of Call, IP 80 bbl. through Cockfield perforations 7,960-66 ft.

SOUTH HILLJE—Wharton County, April, Sam G. Harrison 1 G. P. Willis, R. B. Wallace & R. H. Hancock, Section 14, L. L. Miller survey, Abstract 529, 11 miles southeast of Hillje, IP 103 bbl. from Marginulina perforations 5,230-44 ft.

SOUTH HILLJE (GAS)—Wharton County, March, Sam G. Harrison 1 T. N. Mauritz et al, M&C Survey, Abstract 281, Section 11, 12 miles southeast of Hillje, TP 1,000,000 cu. ft. gas, from Marginulina perforations 5,226-32 ft.

SOUTH HYATT—Tyler County, February, Atlantic Refining Co. 1 Houston Oil-American Republics Co., BBB&C Survey, Abstract 139, Section 3, IP 399 bbl. from Wilcox perforations 8,379-82 ft.

VILLAGE MILLS—Hardin County, April, Houston Oil Co. of Texas & American Republics Corp. 2 Fee-Hardin County School Land, in Hardin County School Lands Survey, IP 297 bbl. from Cockfield perforations 5,797-5,802 ft.

WESTHOFF—Jackson County, February, Stewarts 1 A. E. Westhoff et al, Jos. Rector League, 1½ miles southeast of Edna, IP through perforations in Frio 5,828-40 ft., estimated 2,170,000 cu. ft. gas, IP through perforations 5,964-72 ft., 3,050,000 cu. ft.

WEST MARKHAM — Matagorda County, February, Atlantic Refining Co. 3-C Denman-Kountze, Henry Parker Survey, lot 12, Midway between 1 and 2, dry holes, on "C" lease, IP 4,000,000 cu. ft. gas and 4 bbl. condensate from Miocene perforations 4,865-78 ft.

WEST ORANGE HILL—Colorado County, February, Pan American Production Co. 1 R. L. Williams, CTRR Survey 662 and 663, test in 663, 8 miles west of Eagle Lake, 3

miles northeast of Ramsey, IP 3,156,000 cu. ft. gas from Wilcox perforations 8,368-90 ft.

UNNAMED — Liberty County, August, Glenn H. McCarthy & Son Oil Co. 1-A A. G. Blanke, Levi Barrow Survey, Abstract 137, north of old Hankamer field, IP 3,000,000 cu. ft. gas and 17 bbl. condensate through Frio perforations 8,497-8,500 ft.

UNNAMED—Jackson County, January, Sterling Oil and Refining Co. Stewart Boyles 1 H. A. Meyer, 5 miles south of Ganado, Sutherland Survey, IP 2,700,000 cu. ft. gas from Frio perforations 4,952-57 ft.

UNNAMED—Colorado County, November, Stanolind Oil and Gas Co. 1 Hayes Stephens, Chesterville area, GH&H Survey, 26, IP 5,050,000 cu. ft. gas through perforations 9,260-75 ft.

STRATTON RIDGE—Brazoria County, November, E. Cockrell 3 Seaburn Estate Heirs, Jared E. Groce 5 League Grant, 11 miles southwest of Angleton, IP 232 bbl. through Miocene perforations 3,956-66 ft.

UNNAMED—Montgomery County, December, K. B. Knox Drilling Co. 1 J. W. Wood, Wm. Weir Survey 42, 4 miles northwest of Willis, IP estimated 12 bbl. through perforations 3,761-62 ft.

NEW PAYS

BLUE LAKE—Brazoria, September, Glenn H. McCarthy 1 T. J. McMillan Estate, in Geo. Robinson Survey, Abstract 126, IP 238 bbl. through Frio perforations 9,000-08 ft.

BOLING — Wharton County, December, Union Oil Co. of California 3 Estate of E. Hawes & Lizzie M. R. Hawes, in John Huff League, Abstract 31, IP 14 bbl. through perforations 4,882-4,900 ft.

COLD SPRINGS—San Jacinto County, November, Butcher-Arthur, Inc. 1 N. R. Dodson, in W. M. Logan Survey, Abstract 199, south of Cold Spring, 1 mile northwest of discovery well, IP through perforations 4,490-4,502 in Cockfield—170 bbl., and IP through perforations 4,374-88 ft. 2,371,000 cu. ft.

EAST BAY CITY—Matagorda County, August, Stanolind Oil & Gas Co. 1 Elizabeth Lukefohr Barth, in M. O'Connel and I&GN Survey, IP 40 bbl. through Lower Frio perforations 10,424-28 ft.

LANE CITY—Wharton County, November, H. W. Snowden 2 H. C. Cockburn in S. Castleman Survey, Block 105, IP 85 bbl. through Frio perforations 5,433-37 ft.

NASH DOME—Fort Bend County, November, Danciger Oil and Refining Co. 1 Theodor Meier, in H. N. Cleveland Survey, IP 240 bbl. through Frio perforations 5,860-75 ft.

PINEHURST—Montgomery County, May, Pan American Production Co. 1 L. E. Posey, in John B. Richards Survey, Abstract 449, IP 288 bbl. Wilcox perforations 11,002-086 ft., IP 75 bbl. through perforations 9,564-9,622 ft.

SARATOGA — Hardin County, October, D. D. Feldman 1 S. F. Bashara, in J. B. Reaves Survey, IP 395 bbl. through Yegua perforations 6,511-70 ft.

SILSBEE—Hardin County, July, American Republics & Houston Oil Co. of Texas 33 Brooks-Fee, in G. W. Brooks League, IP 162 bbl. through Yegua perforations 7,510-18 ft.

SOUTH LIBERTY—Liberty County, November, F. J. Bashara 1 Pickett, in M. G. White Survey, old well drilled deeper, IP 87 bbl. through Frio perforations 3,600-18 ft.

HITCHCOCK—Galveston County, December, Stewarts 16 Fee, Jas. Spillman Survey, IP 162 bbl. through perforations 6,523-26 ft.

BOLING — Wharton County, December, Danciger Oil & Ref. 3 A. A. Mullins, (OWWO), IP 250 bbl. through perforations 2,614-20 ft.

EXTENSIONS

BOLING — Wharton County, September, Union Oil Co. 1 Estate of E. Hawes & L. M. R. Hawes, in John Huff League, Abstract 31, 1 mile northwest of Iago, IP 156 bbl. through Marginulina perforations 4,550-70 ft.

CHESTERVILLE—Colorado County, July, Stanolind Oil & Gas Co. 1 E. A. Wiese, GH&H Survey, ¾ mile southeast of Magnolia Petroleum Co. 1 Anderson, discovery well, IP 26 bbl. condensate through Yegua perforations 6,058-70 ft.

DABOVAL—Wharton County, September, Humble & Refining Co. 1 F. T. Reitz et al, in W. D. Ivey Survey, Abstract 517, 5½ miles southwest of El Campo, IP 61,000,000 cu. ft. gas, 11 bbl. condensate per million.

HOPE—Lavaca County, August, Sterling Oil and Refining Corp. 1 R. H. Goodrich, J. J. Poindexter Survey, 1 mile south extension, IP 60 bbl. condensate and 1,500,000 cu. ft. gas, through perforations 8,890-8,950 ft.

OLD OCEAN—Brazoria County, October, Magnolia Petroleum Co. and Abercrombie Oil Co. 1 Peter Studer et al, in S. F. Austin 7½ League, 2 miles east of Sweeney, IP 295 bbl. through Frio perforations 10,-830-50 ft.

THOMPSON—Fort Bend County, October, Cecil Hagen et al 3 Wolters, Samuel Kenedy Survey, Abstract 44, IP 224 bbl. through perforations 5,412-20 ft.

BLUE LAKE—Brazoria, December, Glenn H. McCarthy 1-T Thomas W. Masterson, Geo. Robinson Survey, Abstract 126, IP 207 bbl. through perforations 8,932-38 ft.

LOWER GULF COAST TEXAS

ALBERT WEST—Live Oak County, July, Continental Oil Co. 2-A Albert West, in M. Cronican Survey, Abstract 135, 1½ miles southeast of Kittie, IP 103 bbl. from Wilcox perforations 6,720-22 ft.

BOYCE—Goliad County, July, Magnolia Petroleum Co. 1 W. W. Boyce, CCSD&RGNG Survey, IP 110,000,000 cu. ft. gas from Wilcox perforations 7,470-90 ft.

BORREGAS—Kleberg County, December, Humble Oil & Refining Co. 1 King Ranch-Borregas, Santa Gertrudis Grant, 8½ miles southwest of Kingsville, IP 40 bbl. through perforations 6,889-95 ft.

CHEEVES — Nueces County, February, L. M. Lockhart 1 Carrie Cheeves, San Antonio de Agua Dulce and Casa Blanca Grants, 2 miles north of Banquette, IP 2,000,000 cu. ft. gas, plus 11 bbl. condensate, from Frio perforations 5,168-82 ft.

COY CITY—Karnes County, March, Seaboard Oil Co. of Delaware 1 Sallye Treadwell, in Henry S. Brown Survey, Abstract 32, 2 miles southeast of Coy City, IP 147 bbl. from Wilcox perforations 7,144-49 ft.

FALLS CITY — Karnes County, January, Southern Minerals Corp. 1 Jose F. Bartosch, in Louis Manchaca Survey, Abstract 5, 1 mile north of Falls City, IP 19 bbl. through perforations 4,651-55 ft.

GAFFNEY — Victoria County, March, James Stewart & Co. 1 Mrs. Grace Gaffney, Juan Flores Survey, Abstract 29, 3 miles southeast of Terrell field, 6 miles northwest of McFaddin, IP 49 bbl. from Frio perforations 5,017-21 ft.

GYP HILL — Brooks County, June, The Texas Co. 3 Mary M. Lasater, in "Loma Blanca," Francisco Guerra Chappa Grant, Burton & Danforth Subdivision of Parrita Ranch, 5 miles southeast of Falfurrias, IP 28 bbl. fluid, 28 per cent water, and 4,500,000 cu. ft. gas, from Frio perforations 6,656-60 ft.

HINNANT—Live Oak County, August, Wright & Christie 1 Mrs. M. A. Hinnant, in Ed Quinn Survey, Abstract 388, 19 miles southeast of George West, IP 78 bbl. from Cockfield perforations 5,772-80 ft.

HYSAW—Karnes County, September, Seaboard Oil Co. of Delaware 1-A E. A. Hysaw, Don Erasmo Seguin Survey, Abstract 10, 7 miles west of Karnes City and 2 miles southwest of Hobson field, IP 100 bbl., through Carrizo-Wilcox perforations 3,973-76 ft.

KITTIE WEST—Live Oak County, March, Continental Oil Co. 1 Kittie West Schreiner, in D. R. Fant & J. Poitevent Survey, 5 miles south of Kittie, IP 46 bbl. condensate, from Wilcox perforations 6,705-11 ft.

MAEDGEN—San Patricio County, March, H. H. Howell 1 C. A. Maedgen, Mathis Ranch Subdivision, Block 4, 2 miles southwest of Mathis, IP 26 bbl. from Frio perforations 4,182-96 ft.

MARCADO CREEK—Victoria County, November, Taylor Refining Co. 1 Raymond F. Meyer, Andrew Peets Survey, Abstract 275, 5 miles east of Victoria, IP gas well, no gage, shut in, through Frio perforations 4,720-26 ft.

MARIPOSA—Brooks County, March, Humble Oil & Refining Co. 1 D. J. Sullivan, Account 1, in M. D. Floyd Survey 152, 8 miles southeast of Falfurrias, IP 293 bbl. from Vicksburg perforations 8,535-45 ft. (dual completion, upper sand perforations 7,740-50 ft. shut in gas well).

MONTE NEGRA — Kleberg County, December, Humble Oil & Refining Co. 1 King Ranch-Monte Negra, Santa Gertrudis Grant, 4 miles southwest of Kingsville, IP 168 bbl. through perforations 7,065-73 ft.

NAYLOR—Jim Wells, September, H. M. Naylor Oil Co. 1 Lillian Muil, Los Presenos De Abajo Grant, Abstract 171, Share 3, 2 miles north of Agua Dulce, IP 12,000,000 cu. ft. gas through Frio perforations 3,974-84 ft.

NORTH FANNIN—Goliad County, February, Amerada Petroleum Corp. 1 Albert Waitschies, E. J. Armstrong Survey, 12 miles northeast of Goliad, IP 22 bbl. through Vicksburg perforations 5,920-35 ft.

RACHAL—Brooks County, August, Humble Oil & Refining Co. 1 B. A. Skipper, Jr., in "La Encantada Grant," 1 mile northwest of Rachal, IP 6,500,000 cu. ft. gas, and 11 bbl. per day condensate, through perforations 6,100-12 ft.

RAGSDALE—Victoria County, February, Raymond D. Reynolds et al 1 Sallie E. Ragsdale, in J. M. McConnaughey Survey, Abstract 262, 5½ miles southwest of Inez, IP 36,000,000 cu. ft. gas, from Upper Frio-Vicksburg perforations 4,436-44 ft.

RAMON—Jim Wells County, March, Bridwell Oil Co. 1 Ramon Garcia, La Trinidad Grant, Abstract 300, 3½ miles southwest of Ben Bolt, 1 mile south of Ben Bolt field, IP 156 bbl. from Frio perforations 4,376-82 ft.

RAYMONDVILLE—Willacy County, January, The Texas Co. 2 Yturria Brothers Land & Cattle Co. in San Juan de Carricitos "Jose Narcisco Cabazos" Grant, IP 47 bbl. from Miocene perforations 6,380-82 ft.

RICARDO—Kleberg County, January, Tide Water Associated Oil Co. 1 E. W. House, in Kleberg Town & Improvement Subdivision, 2 miles northeast of Ricardo, IP 208 bbl. from Frio perforations 7,266-68 ft.

RIVIERA — Kleberg County, August, Southern Minerals Corp. 1 Leo Kaufer, in Koch's Subdivision 1, Riviera Lands, Section 24, Block 42, 4½ miles east of Riviera, IP 42 bbl. condensate and 3,367,000 cu. ft. gas, through perforations 7,465-85 ft.

SANTA MARIA—Hidalgo County, March, La Gloria Corporation 1 South-Weslaco Unit, Tract 731, Section 165, 1 mile southwest of Weslaco, in Llano Grande Survey, IP 54,000,000 cu. ft. gas, from Frio perforations 7,455-85 ft.

SHERIFF — Calhoun County, November, Quintana Petroleum Corp. 1 W. A. Shofner Estate, Bonifacio Rodriques League, 5 miles northwest of Port Lavaca, IP 74 bbl. through Frio perforations 5,710-25 ft.

SOUTH BLANCONIA—Bee County, October, S. Chamberlain 1 H. C. Wood, Jose Maria Castillo Survey, 10 miles west of Refugio, IP shut-in gas well, no gage, Vicksburg perforations 5,230-45 ft.

SOUTH TULSITA-WILCOX—Bee County, March, Fred W. Shield 1 J. L. Courtney, in Tulsita townsite, George Kerr Survey, Abstract 209, 2 miles north of Pettus, IP 380 bbl. from Wilcox, perforations 7,048-59 ft.

SOUTH YOAKUM—DeWitt County, July, Pure Oil Co. 1 Eugene Rice, James May Survey, 2½ miles south of Yoakum, IP estimated 84,000,000 cu. ft. gas and 26 bbl. condensate, from Wilcox perforations 8,160-90 ft.

THEIS—Bee County, October, Tom Graham 1 Theis et al, R. S. Bernes Survey, Abstract 115, 16 miles northwest of Beeville, IP 105 bbl. through Hockley sand perforations 3,573-82 ft.

WEST GOLIAD—Goliad County, March, Sun Oil Co. 1 R. A. Thompson, in Ignacio

Guarjardo Survey, 5 miles southwest of Goliad, IP 314 bbl. from Wilcox (open hole) 11,182-192 ft.

WILLMANN—San Patricio County, May, Bridwell Oil Co. 1 Bertha C. Willmann, in Delgado Grant, 1 mile southwest of Mathis, IP 132 bbl. from Frio sand perforations 4,553-63 ft.

UNNAMED—Brooks County, March, The Texas Co. 1 McGill Brothers, in San Antonio-J. A. & A. M. Garcia Survey, Abstract 214, 13 miles southwest of Encino, IP 276 bbl. from Frio perforations 6,114-20 ft.

UNNAMED—Karnes County, July, Magnolia Petroleum Co. 1 D. O. Klingeman, in Jas. Bradberry Survey, 9 miles southwest of Karnes City, IP 414 bbl. condensate and 4,925,000 cu. ft. gas, from Wilcox perforations 7,880-7,914 ft.

UNNAMED—Karnes County, March, Phillips Petroleum Co. 1 W. P. Belknap, Jr., in Chas. Haynes Survey, 7½ miles southeast of Kenedy, IP 110 bbl. condensate from Wilcox perforations 7,031-35 ft.

UNNAMED—San Patricio County, September, Republic Natural Gas Co. 1 J. B. Hardwick, in Welder & Odem Subdivision, Block 48, 3 miles northwest of Odem, IP gas, shut-in, no gage, from Frio sand perforations 6,885-6,900 ft.

UNNAMED—San Patricio County, March, Stanolind Oil and Gas Co. 2 Welder Ranch Lands, in Calallen Area, Victoriano Tares & Pedro Villarreal Grant, Abstract 32, IP 7,400,000 cu. ft. gas, shut-in, from Catahoula perforations 3,375-81 ft.

UNNAMED—Victoria County, September, Rowan and Hope 3 Sally Ragsdale, in Jas. McConnaughey Survey, Abstract 262, 10 miles east of Telferner, IP gas well, no gage, from Frio perforations 4,443-52 ft.

UNNAMED — Goliad County, December, Magnolia Petroleum Co. 1 R. F. Irby, Jos. Callahan Survey, 12 miles southwest of Goliad, IP 134 bbl. condensate through perforations 9,900-10 ft.

UNNAMED—Victoria County, December, H. J. Porter 1 D. L. Miller, J. S. Hendershot Survey, Abstract 183, 5½ miles east of Telferner, IP 15,000,000 cu. ft. gas, producing from open hole 4,438-44 ft.

UNNAMED—Bee County, June, Navarro Oil Co. 1 Forrest A. Dahl, in Geo. Fagan Survey, 3½ miles northwest of Pettus, IP 7,200,000 cu. ft. gas through perforations 6,985-93 ft.

NEW PAYS

GAFFNEY—Victoria County, July, Arkansas Fuel Oil Co. 2-A Etta Terrell, Miguel Menchaca Grant, IP estimated 11,000,000 cu. ft. gas, from Vicksburg perforations 5,312-23 ft.

LA GLORIA—Brooks County, November, Magnolia Petroleum Co. 1 Church of the Brethren Unit, in Falfurrias Farm and Garden Tracts, Lot 2, Block 11, IP 156 bbl. through perforations 7,150-55 ft.

LA ROSA—Refugio County, July, Stanolind Oil and Gas Co. 9 J. W. Spaulding, Johnson & Pugh Subdivision of Bonnie View Ranch, IP 22,300,000 cu. ft. gas and 189 bbl. condensate per day, through Frio perforations 6,775-81 ft.

LA SAL VIEJA—Willacy County, November, Magnolia Petroleum Co. & J. S. Abercrombie Co. 1 Harvey Geis, in San Juan De Carricitos Grant, 3 miles west of Raymondville, IP 86 bbl. through Frio perforations 8,935-55 ft.

MAEDGEN — San Patricio County, July, Republic Natural Gas Co. 1 G. A. Person, in J. J. Summers Survey, 1 mile south of Mathis, IP estimated 10,000,000 cu. ft. gas through Frio perforations 5,179-84 ft. Now shut in.

NORTH LA ROSA—Refugio County, December, Phillips Petroleum Co. 1 S. Bill, Johnson & Pugh Subdivision, Section 40, IP 46 bbl. condensate through perforations 6,156-72 ft.

SOUTH LOUISIANA

BAYOU CARLIN—St. Mary Parish, August, Humble Oil & Refining Co. 1-H Miami Corp., in Bayou-16s-8e, IP 264 bbl. from Miocene sand perforated 11,600-11 ft.

BAYOU PEROT—Jefferson Parish, March, The California Co. 1 E. P. Brady et al, 2-15s-23e, 2 miles southwest of Barataria field, IP 258 bbl. from Miocene perforations 9,897-9,904 ft.

IOTA — Acadia Parish, February, Union Sulphur Co. & Magnolia Petroleum Co. 1 Medlenka, Iota area, 11-8s-2w, IP 215 bbl. from Frio perforations 9,380-90 ft.

LAKE CHARLES — Calcasiu Parish, December, Union Sulphur Co., Inc., 1 Bordages, 5-10s-9w, IP 61 bbl. through Hackberry perforations 8,480-90 ft.

MUD LAKE—Cameron Parish, November, Magnolia Petroleum Co. 1-A Lutcher, 32-14s-11w, IP 48 bbl. condensate through Hackberry perforations 10,652-60 ft.

ORETTA — Beauregard Parish, March, Magnolia Petroleum Co. 1 Musser-Davis Lumber Co., NW NW NW 33-6s-11w, IP 174 bbl. from Lower Cockfield, perforations 8,708-12 ft.

RESERVE—St. John the Baptist Parish, January, Atlantic Refining Co. 1-B Lutcher-Moore Lumber Co., 33-10s-6e, IP 308 bbl. from Frio, perforations 10,254-66 ft.

SOUTH BAYOU MALLET — Acadia Parish, May, Union Sulphur Co., Inc. 1 Mervine Kahn, 25-7s-1e, IP 122 bbl. from Chickasawhay sand, Oligocene, perforations 9,610-14 ft.

SOUTH ELTON—Jefferson Davis Parish, March, Stanolind Oil & Gas Co. 1 W. H. Tupper, 29-7s-3w, IP 237 bbl., from Frio perforations 8,064-85 ft.

SOUTH HOUMA—Terrebonne Parish, January, Union Oil Co. of California, 1 Gaidry, Houma Area, 22-17s-17e, IP 5 million cu. ft. gas and 25 bbl. condensate from Miocene sand perforations 10,290-98 ft.

SOUTH JEANERETTE—St. Mary Parish, September, Atlantic Refining Co. 1 Joseph A. Blanchard, 37-13s-9e, IP 211 bbl. from Miocene perforations 7,476-84 ft.

SOUTH ST. GABRIEL—Iberville Parish, September, Noble & Baker 1 W. E. Caldwell, 52-9s-2e, IP 115 bbl. from Marginulina perforations 9,210-14 ft.

WEEK'S ISLAND — Iberia Parish, May, Shell Oil Co., Inc., 1 Smith-State Lease 500, Unit 1, 13-14s-6e, IP 112 bbl. from Miocene perforations 13,505-520 ft.

WEST PINEGROVE — Beauregard Parish, February, Magnolia Petroleum Co. 1-C Lutcher-Moore Lumber Co., 24-5s-12w, IP 14 bbl. from Wilcox perforations 11,343-50 ft.

NEW PAYS

AVERY ISLAND—Iberia Parish, October, Humble Oil & Refining Co. 7-B Petit Anse Co., 23-13s-5e, IP 367 bbl. through Miocene perforations 8,648-65 ft.

AVERY ISLAND—Iberia Parish, November, Humble Oil & Refining Co. 1 Chas. G. Hooks et al, 23-13s-5e, IP 421 bbl. through Frio perforations 11,875-85 ft.

BAYOU DES GLAISE — Iberville Parish, November, Humble Oil & Refining Co. 6-B Wilbert Mineral Corp., 76-8s-8e, IP 268 bbl. through Frio perforations 10,434-444 ft.

BAYOU PEROT — Jefferson, December, The California Co. 3 E. P. Brady, (N. Delta Farms) 2-16s-23e, IP 314 bbl. from Miocene perforations 9,260-85 ft.

LAKE BARRE—Terrebonne Parish, July, The Texas Co. 44 State-Lake Barre, 19-21s-20e, IP 41 bbl. condensate through Miocene perforations 11,772-788 ft.

NAPOLEONVILLE — Assumption, December, Shell Oil Co., Inc., 1 C. L. Triche, 33-12s-13e, IP 245 bbl. from Miocene perforations 9,462-67 ft.

UNIVERSITY—East Baton Rouge Parish, November, William Helis 15 R. E. Nelson, 36-7s-1w, IP 160 bbl. through Frio perforations 9,958-70 ft.

VENICE — Plaquemines Parish, August, Tide Water Associated Oil Co. 19 Manhattan Land & Fruit Co., 26-21s-30e, IP 173 bbl. through Miocene perforations 7,962-80 ft.

EXTENSIONS

NORTH CANKTON — Lafayette Parish, November, Shell Oil Co., Inc. 1 F. A. Broussard, 65-8s-4e, IP 560 bbl. from Frio, perforations 10,642-656 ft.

SHUTESTON — St. Landry Parish, June, Claude F. Morgan 1 Frank Dimmick, 173-7s-4e, IP 32 bbl. through Miocene perforations 10,368-74 ft.

NORTH LOUISIANA

BIG CREEK—Richland Parish, July, Southport Petroleum Co. 1 Howard, NW NW NW 4-16n-8e, Tuscaloosa 2,965-75 ft., IP 258 bbl.

CHATHAM—Jackson Parish, June, Shell Oil Co., Inc., 1 Tremont Oil Co., NW SE 22-15n-1w, pay formation 9,584-9,620 ft., gas well.

FLATWOODS—Rapides Parish, July, Louisiana Land & Exploration Co. A-2 Bentley Lumber Co., 36-5n-5w, Wilcox 6,488-94 ft., IP 50 bbl.

HAYNESVILLE, EAST—Claiborne Parish, September, Hunt 1 Owens, NE SE 15-23n-7w, pay formation 4,126-50 ft., gas well.

KNOWLES — Lincoln Parish, September, California Co. 1 Noble, 12-19n-4w, Cotton Valley 8,700-50 ft., IP 145 bbl.

SAILES—Bienville Parish, June, Ohio Oil Co. 1 Woodard-Walker, 31-17n-7w, pay formation 6,799-6,819 ft. and 6,829-56 ft., IP 427 bbl.

SHONGALOO, NORTH — Webster Parish, June, Hunt Oil Co. 1 Roberts, 11-23n-10w, Pettit 5,734-44 ft., IP 50 bbl.

VIXEN—Caldwell Parish, June, Shell Oil Co. 1 Louisiana Central, SW SW NW 31-15n-3e, Travis Peak 9,510-9,700 ft., gas well.

UNNAMED—Franklin Parish, April, American Liberty Oil 1 Kny, 12-16n-8e, Tuscaloosa 3,557-62 ft., gas well.

UNNAMED—Bienville Parish, December, Ohio Oil Co. 1 Crow, SW NW 32-17n-7w, Travis Peak 7,535-48 ft., gas well.

NEW PAYS

BLANCHARD—Caddo Parish, March, Phillips 1 Moneyham, NE NW 5-18n-16w, pay formation 5,854-59 ft., IP 73 bbl.

HAYNESVILLE — Claiborne Parish, July, Blackwell Oil & Gas Co. A-1 Waller-Beene, SE SE 10-23n-8w, Bodcaw 7,980-8,004 ft., IP 264 bbl.

HAYNESVILLE, EAST—Claiborne Parish, October, Hunt 1 Birdsong, 15-23n-7w, lower Sligo 5,172-81 ft., IP 112 bbl.

RED RIVER-BULL BAYOU — Red River Parish, March, Texas Co. 1 Russ, NW SE 16-12n-10w, Rodessa 5,000-20 ft., gas well.

EXTENSIONS

LAKE ST. JOHN—Concordia Parish, September, California Co. 3 Brown, 46-9n-10e, pay formation 10,222-250 ft., gas well; and Concordia Parish, April, California Co. 1 Bennett, 27-9n-10e, Tuscaloosa 8,340-70 ft., IP 135 bbl. condensate.

ARKANSAS

WESSON — Ouachita County, September, McAlester Fuel Oil Co. 1 Wesson, NE NE SW 24-15s-19w, Glen Rose 2,648-80 ft., IP 96 bbl.

NEW PAYS

STRONG—Union County, November, Brown & Wheeler 1 Clark, SW SW 22-18s-12w, Cotton Valley 4,817-22 ft., IP 60 bbl.

OKLAHOMA

ALTUS, EAST—Jackson County, October, Texas Co. 1 Holt, NE NE SE 8-1n-19w, granite wash 1,419-33 ft., IP 14 bbl.

ANTIOCH, EAST—Garvin County, June, Cities Service Oil Co. 1 Abernathy, SE SW SE 13-3n-2w, first Bromide 5,495-5,502 ft., IP 150 bbl.

AYLESWORTH, NORTHWEST—Marshall County, May, Phillips Petroleum Co. et al 1 Gipson, SE SE NE 10-6s-6e, third Bromide 3,375-3,400 ft., IP 200 bbl.

AYLESWORTH, SOUTHEAST — Bryan County, April, Amerada Petroleum Co. 1 Williams, NE NE SW 27-6s-7e, sand 2,910-3,005 ft., IP 167 bbl.

BARNES, NORTH—Garfield County, March, Con-Tex 1 Wolfe, NE SW SW 34-22n-3w, second Wilcox 4,837-47 ft., IP 500 bbl.

BETHANY—Oklahoma County, June, Kerlyn Oil Co. 1 Classen, NW SE 22-12n-4w, Hunton 7,154-7,200 ft., IP 404 bbl. condensate.

BIELINGS, WEST—Noble County, Decem-

ber, Deep Rock Oil Corp. 1 White, SW NE NE 19-23n-2w, sandy dolomite 4,434-50 ft., IP 462 bbl.

BLACKDOG, WEST—Osage County, June, Wilcox Oil Co. 1 Wister, SW SE NW 15-22n-8e, Burgess sand 2,531-50 ft.. IP 275 bbl.

BLAKELY, NORTH—Okfuskee County, September, Wood Oil Co. 1 Smith, SE SW NE 23-12n-10e, Booch 2,488-2,518 ft., IP 115 bbl.

BROWN, EAST—Garfield County, November, Gulf Oil Corp. 1 Decker, SE SW NW 12-20n-4w, second Wilcox 6,095-6,119 ft., IP 80 bbl.

BURT, SOUTHWEST — Tillman County, February, Gulf Oil Corp. 1 Copeland, N½ NE NW 31-1s-18w, dolomite 4,568-84 ft., IP 119 bbl.

BYARS, NORTH—Pottawatomie County, May, Jenkins & Dickson 1-A Goodnight, NW NW NE 4-5n-3e, Layton 2,838-40 ft., IP 40 bbl.

CAMP—Carter County, May, Continental Oil Co. 1 Dotson, SW NW NE 7-2s-3w, sand 6,356-6,487 ft., IP 50 bbl.

CARNEGIE, SOUTHWEST—Kiowa County, October, Fox & Fox 1-A Pound, NW SW SW 36-7n-14w, Pontotoc 768-84 ft., IP 100 bbl.

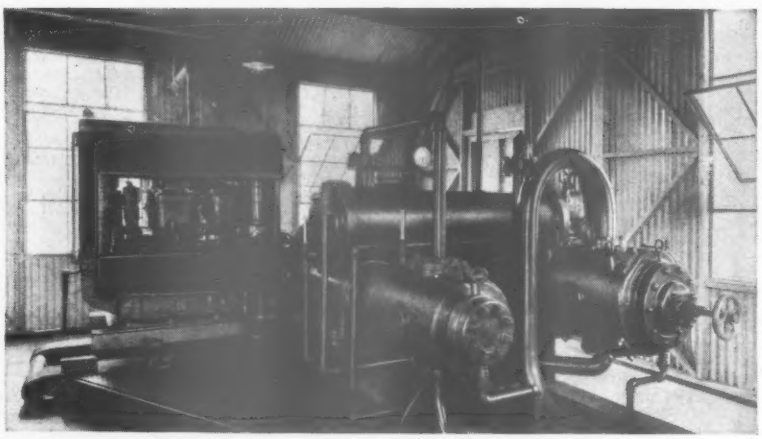
CASHION, NORTHWEST—Kingfisher County, September, Phillips Petroleum Co. and Carter Oil Co. 1 Jirick, SW SW 26-16n-5w, Hunton 7,064-95 ft., IP 153 bbl.

CHEYARHA, SOUTHWEST — Seminole County, August, Ashland Oil & Refining Co. 1 Norvell, SW NE SW 6-9n-7e, Booch 3,669-82 ft., IP 50 bbl.

CHITWOOD—Grady County, June, Magnolia Petroleum Co. 1 Cunningham, SE SE 33-5n-6w, pay zone 10,879-82 ft., IP 922 bbl. condensate.

CHOATE PRAIRIE — Pittsburg County, January, Public Service Co. 1 Van Hauser, NE NE NW 20-8n-14e, Gilcrease 3,476-3,655 ft., gas well.

CLAUD — Stephens County, February,



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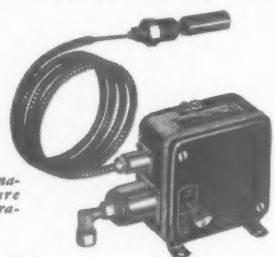

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Magnolia Petroleum Co. 1 Jones heirs, NW SE 21-1n-4w, sand 5,335-83 ft., IP 150 bbl.

COFFEE CREEK—Oklahoma County, February, Gulf Oil Corp. 1 Beck, SW SW SW 5-14n-2w, Hunton 5,760-5,804 ft. and 5,824-49 ft., IP 70 bbl.

CORBETT, WEST — Cleveland County, March, Magnolia Petroleum Co. 1 Anneler, SW NE 26-6n-1w, Bartlesville sand 6,075-83 ft., IP 100 bbl.

COUNCIL CREEK—Payne County, September, E. P. Halliburton 1 Drumm, NW SE SE 6-19n-4e, Bartlesville 3,729-38 ft., IP 10 bbl.

CUMMINGS—McIntosh County, August, H. C. Swick et al 1 Well, NW NW 9-9n-14e, Gilcrease 2,721-33 ft., gas well.

EVANSVILLE, NORTHWEST — Logan County, September, Texas Co. 1 Arundel, SE NE SW 2-15n-1w, Bartlesville 5,231-43 ft., IP 114 bbl.

FREDERICK, SOUTH — Tillman County, May, Texas Co. 1 Smith, E½ NW NW SE 36-2s-18w, Canyon 2,990-3,070 ft., IP 10 bbl.

GARBER, NEW—Garfield County, February, Cities Service Oil Co. 1 Mariner, NW NE NW 6-22n-3w, Arbuckle 5,246-97 ft., IP 150 bbl.

HOBART, NORTHEAST—Kiowa County, January, Pure Oil Co. 1 Hinton "A," SE NE NW 10-7n-17w, Pennsylvanian sand 1,728-84 ft., IP 1,784 bbl.

HOOVER, NORTHWEST—Garvin County, June, Helmerich & Payne 13 Freeman, NE NE SW 15-1n-1w, pay zone 1,890-1,921 ft., gas well.

HORN'S CORNER, WEST—Hughes County, August, Deep Rock Oil Corp. et al 2 Strickland, SW NE NE 19-7n-10e, Cromwell 3,825-27 ft., gas well.

HUNTER, SOUTHWEST—Garfield County, December, Atlantic Refining Co. 1 Schmidt, SE SE SW 25-24n-5w, Wilcox 6,140-48 ft., IP 210 ft.

JONES, NORTHEAST—Oklahoma County, September, Stanolind Oil & Gas Co. et al 1 Bednar, NW NE SW 23-13n-1e, Cleveland 4,632-42 ft., IP 45 bbl.

KEYES — Cimarron County, December, Pure Oil Co. 1 State, 7-5n-8ecm, sand 4,800-40 ft., IP 140 bbl.

LAKE CREEK—Greer County, February, E. M. Thomasson 1 Craig, NW SE SE 3-6n-21w, granite wash 607-32 ft., IP 10 bbl.

LINDSAY, NORTH—McClain County, August, Cities Service Oil Co. et al 1 Lawson, SW NW 22-5n-4w, Simpson 10,943-90 ft., IP 1,200 bbl.

LONE STAR—Oklahoma County, September, Ace Gutowsky 1 Crum, NW NW SE 24-13n-3w, Cleveland 5,724-31 ft., IP 120 bbl.

McGEE—Garvin County, January, Skelly Oil Co. et al 1 Rakestraw, SE SW SE 4-4n-3e, Pennsylvanian sandy shale 2,490-2,500 ft., IP 300 bbl.

MARLOW, SOUTH — Stephens County, September, Gulf Oil Corp. 1 Briscoe estate, SE NW 36-2n-8w, Pennsylvanian sand 7,732-74 ft., gas well.

MARLOW, WEST—Stephens County, January, Texas Co. 1 Helm, SW SE NW 21-2n-8w, sand 4,971-5,014 ft., IP 127 bbl.

MOORE-HARP—Cleveland County, August, O. G. Harp 1 Mattheson, NE NW NE 19-10n-2w, Bartlesville 7,573-7,618 ft., IP 57 bbl.

PADEN, SOUTH—Okfuskee County, May, J. E. Crosbie 1 Sykora, NE NE SW 20-12n-7e, Cromwell 3,860-80 ft., IP 119 bbl.

POLO, SOUTH—Noble County, August, Magnolia Petroleum Co. 1 Wallard, SW SW SW 34-22n-2w, Bartlesville 4,673-88 ft., IP 193 bbl.

SPARKS, SOUTH—Lincoln County, February, Mid-States Oil Co. 1 Barnes, OWWO previously dry, SW SE 19-13n-5e, Prue 3,650-95 ft., IP 18 bbl.

ULAN, EAST—Pittsburg County, May, Public Service Co. 1 Travis, NW NE 5-7n-14e, sand 1,850-1,925 ft., gas well.

WARWICK, EAST—Lincoln County, January, J. W. Sorrels 1 Sukovaty, SW SW SE 15-14n-3e, Prue 4,007-17 ft., IP 26 bbl.

WATCHORN, NORTH—Pawnee County, July, L. B. Jackson and Deep Rock Oil Corp. 1 Donohoe, NW NW NW 27-23n-3e, Bartlesville 3,582-88 ft., IP 41 bbl.

WATCHORN, NORTHEAST — Pawnee County, August, Sunray Oil Co. 1 Gilbert,

NW SW NE 30-23n-3e, Layton 2,725-32 ft., IP 13 bbl.

WEST POINT, SOUTH — Payne County, June, Northern Ordnance, Inc., 1 Dewitt, NE SE SW 34-20n-4e, Bartlesville 3,569-75 ft., IP 35 bbl.

WINN, SOUTH—Lincoln County, December, Aladdin 1 Young, NW SW NW 32-12n-3e, Bartlesville 4,855-72 ft., IP 19 bbl.

WOFFORD, SOUTH — Seminole County, August, F. C. Hall 1 Damron, NE NE NW 20-6n-7e, Senora sand 1,900-60 ft., IP 46 bbl.

UNNAMED—Hughes County, February, Texas Co. 1 Pearson, S½ NE 16-5n-11e, Cromwell 5,410-76 ft., gas well.

UNNAMED—Creek County, March, Williams & Copeland 1 Eaton, SW NW SE 12-14n-10e, Dutcher 2,560-95 ft., IP 45 bbl.

UNNAMED—Logan County, March, Fox & Fox 1 Schmidt, NW NW 35-18n-4w, Layton 4,809-73 ft., IP 47 bbl.

UNNAMED—Pottawatomie County, April, Texas Co. 1 Vestal, NW NW SE 28-6n-3e, Layton 2,854-78 ft., gas well.

UNNAMED—Creek County, April, Phillips Petroleum 1 Marchant, SE SW SE 4-14n-7e, Prue 2,850-99 ft., IP 400 bbl.

UNNAMED—Creek County, May, Glen Cole 1 Parks, SW SW NE 15-16n-10e, Dutcher 2,647-66 ft., IP 20 bbl.

UNNAMED—Pottawatomie County, May, Cities Service Oil Co. 1 Hoffman, SE NE NE 34-6n-3e, sand 3,399-3,473 ft., gas well.

ASHER, WEST — Pottawatomie County, May, Kerlyn Oil Co. 1 Bourassa, NW NE SE 21-6n-3e, dolomite 4,116-26 ft., IP 165 bbl.

UNNAMED — Kingfisher County, May, Phillips Petroleum and Carter Oil Co. 1 Hasley, SE SE 28-16n-5w, sand 6,590-6,616 ft., IP 50 bbl.

UNNAMED—Pawnee County, May, Westgate-Greenland 1 Orten, NW NW SE 33-22n-5e, Bartlesville 3,109-50 ft., IP 25 bbl.

UNNAMED—Hughes County, June, Harry Davison Drilling Co. 1 Wells, SE NE NW 29-9n-10e, Booch 2,490-2,515 ft., gas well.

UNNAMED—Pontotoc County, July, J. L. Shaw 1 Broyles, NE NE NW 33-5n-6e, Hunton 2,710-60 ft., IP 30 bbl.

UNNAMED—Pittsburg County, July, Public Service Co. 1 Hartgrove, NW SW 32-8n-14e, Booch 1,984-2,040 ft., gas well.

UNNAMED—Okfuskee County, July, J. T. Hall 1 Ahrens, NW SE 32-10n-12e, sand 2,095-2,120 ft., gas well.

UNNAMED—Creek County, July, Mid-Continent Oil Co. 1 Hittie, SW NE SE 8-17n-8e, Dutcher 3,230-40 ft., IP 25 bbl.

UNNAMED — Okfuskee County, July, C. W. Titus 1 Miracle, NW SW NW 31-11n-9e, Hunton 3,869-87 ft., IP 12 bbl.

UNNAMED — Osage County, September, A. G. Oliphant 3, SE NW 21-28n-11e, Prue 1,356-80 ft., IP 35 bbl.

UNNAMED—Okfuskee County, September, Amerada Petroleum Corp. 1 Canard, SE SE NE 16-10-10e, Cromwell 3,290-3,383 ft., gas well.

UNNAMED—Seminole County, November, Gillespie & Sons 1 Patton, SE NW SE 18-6n-8e, Gilcrease 2,740-55 ft., gas well.

UNNAMED—Muskogee County, November, P. Adkins 1 Ford, NW SW NW 1-13n-18e, Muskogee sand 1,100-30 ft., gas well.

UNNAMED—Stephens County, November, T. H. McCasland 1 Russell, NE NW SE 30-1n-5w, sand 1,666-72 ft., gas well.

UNNAMED—Oklahoma County, December, Harper-Turner 1 Johnson, SE NW 29-14n-2w, Bartlesville 5,894-5,910 ft., IP 47 bbl.

UNNAMED — Logan County, December, Phillips Petroleum Co. 1 Mize, SE SE 25-18n-4w, Layton 4,793-4,812 ft., IP 568 bbl.

UNNAMED — Osage County, December, Norbla & Wilcox 1, NW NE SW 18-26n-8e, Prue 2,300-28 ft., IP 62 bbl.

UNNAMED—Stephens County, December, Amerada Petroleum Co. 1 Sledge, NE SW SE 19-1s-5w, sand 2,220-40 ft., IP 12 bbl.

NEW PAYS

ADA DISTRICT, EAST—Pontotoc County, September, Ashland Oil & Refining Co. 1 Hales, NE NE NW 11-4n-7e, Gilcrease 2,051-62 ft., IP 18 bbl.

APACHE—Caddo County, January, C. C. Lynch 1 Peterson, NE NE NE NW 3-5n-12w, conglomerate lime 795-814 ft., IP 40 bbl.

BLACKDOG, WEST—Osage County, September, Wilcox Oil Co. 2, NE SE NW 15-22n-8e, Arbuckle 2,793-2,817 ft., IP 550 bbl.

ERICK—Beckham County, July, Tide Water Associated Oil Co. et al 1 Baldwin, SE NE NE 10-9n-25w, granite wash 6,787-6,950 ft., gas well.

HOOVER, NORTHWEST—Garvin County, March, Helmerich & Payne 1 Garther, SW SW NE 14-1n-1w, sand 2,446-97 ft., IP 200 bbl.

MARLOW, WEST—Stephens County, February, Texas Co. 1 Bateman, SW NW NE 21-2n-8w, sand 6,149-6,302 ft., IP 55 bbl.; Stephens County, May, Texas Co. 1 Sears, SW NE NE 20-2n-8w, sand 6,714-62 ft., IP 198 bbl.

MOORE, WEST—Cleveland County, June, Mid-Continent Oil Co. 1 Turk, SW SW NE 29-10n-3w, Bartlesville 7,864-75 ft., IP 300 bbl.

PAUL'S VALLEY, EAST—Garvin County, February, Ohio Oil Co. 1 Lewis-Wacker unit, SW SE NW 18-3n-2e, Bromide 3,013-45 ft., IP 266 bbl.

RAMSEY—Payne County, June, Mid-Continent Oil Co. 3 Columbia, NW NE SW 18-18n-2e, second Wilcox 4,756-96 ft., IP 325 bbl.

EXTENSIONS

AYLESWORTH, SOUTHEAST — Bryan County, October, Samedan 1 Jones, NW SW SW 26-6s-7e, second Bromide 3,497-3,676 ft., IP 92 bbl.

BETHANY — Oklahoma County, July, Phillips Petroleum Co. et al 1 Ella, NE NE 22-12n-4w, Hunton 7,141-45 ft., IP 220 bbl. condensate; Oklahoma County, October, Phillips Petroleum Co. 1 Moulton, SW SW 22-12n-4w, Hunton chert 7,251-66 ft., IP 110 bbl.

COFFEE CREEK, SOUTH—Oklahoma County, December, Harper-Turner 1 Bailey, SE NW 28-14n-2w, Bartlesville 5,847-50 ft., IP 3 bbl.

EDMOND, WEST — Kingfisher County,

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January, Anderson-Prichard 1 Collett, SE NW 25-15n-5w, Hunton 7,030-40 ft., IP 250 bbl.; Logan County, January, Cities Service Oil Co. 1 Gaffney, SE NE 29-15n-4w, Bartlesville 6,424-52 ft., IP 88 bbl.; Logan County, February, Stanolind Oil & Gas Co. 1 Christner, SW NE 30-15n-4w, Hunton 6,862-86 ft., IP 800 bbl., Logan County, February, Phillips Petroleum Co. 1 Buetler "A," SE NW 31-15n-4w, Hunton 6,908-60 ft., IP 400 bbl.; Canadian County, February, Fox & Fox 1 Roush, NE NW 1-14n-5w, Hunton 7,050-72 ft., IP 450 bbl.; Oklahoma County, March, Stanolind Oil & Gas Co. 1 Urshel, NW NE 33-13n-4w, Bartlesville 6,982-7,017 ft., IP 250 bbl.; Logan County, March, Atlantic Refining Co. 1 Trindle, SE SE 25-15n-5w, Hunton 6,940-85 ft., IP 150 bbl.; Kingfisher County, May, Anderson-Prichard 1 Stewart, NW NW 24-15n-15w, Hunton 7,014-26 ft., IP 150 bbl.

HORN'S CORNER—Hughes County, May, Deep Rock Oil Corp. 1 Hudson, NE SW SW 32-7n-10e, Cromwell 3,833-41 ft., IP 150 bbl.

HUGOTON — Texas County, January, Phillips Petroleum 1 Mina, 36-1n-13ecm, pay zone 2,867-2,970 ft., gas well; Texas County, November, Phillips Petroleum Co. 1 Patkins, 32-1n-17ecm, pay zone 2,710-2,970 ft., gas well.

KEYES — Cimarron County, February, Pure Oil Co. 1 Rose, SE NE SW 26-5n-8ecm, Pennsylvanian sand 4,630-70 ft., gas well.

KONAWA, SOUTH — Seminole County, December, J. Crosbie 1 Mathis, SE NW SW 35-6n-5e, Seneca lime 2,213-29 ft., IP 260 bbl.

PAUL'S VALLEY, EAST—Garvin County, April, Texas Co. 1 Tripp, SW SE NW 16-3n-2e, Pennsylvanian sand 2,956-3,042 ft., IP 50 bbl.

SCHOLEM - ALECHEM Stephens County, September, Daube and Atlantic Refining Co. 1 Layn, NW NW SW 1-1s-4w, Pennsylvanian sand 3,194-3,463 ft., IP 30 bbl.

TONKAWA—Kay County, October, Continental Oil Co. 1 Mansfield, SE NE NE 25-25n-2w, May 4,390-4,401 ft., IP 53 bbl.

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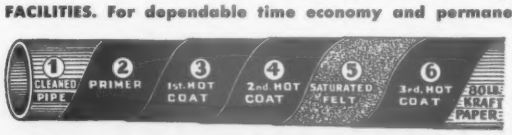

SPECIFICATION TAX-1.

GENERAL PAINT CORPORATION
HILL, HUBBELL & CO. • Division • Cleveland, Ohio
• EXPORT OFFICE: SAN FRANCISCO, CALIFORNIA, U. S. A. •

STILLWATER, WEST — Payne County, February, Hanlon-Buchanan 1 Haering, SE SE SE 18-19n-2e, Misener 4,528-47 ft., IP 100 bbl.

ULAN, EAST—Pittsburg County, August, Public Service Co. 1 Pearson, NW SW 33-8n-14e, Booch 2,050-2,102 ft., gas well.

KANSAS

ADAMS RANCH — Meade County, May, Stanolind Oil & Gas Co. 1 Adams, SW SW SW 8-35-30w, Mississippi lime 5,850-90 ft., gas well.

ATHERTON, NORTH — Russell County, June, Derby Oil Co. 1 Rogg, SE SW 7-13-14w, Arbuckle 3,195-3,200 ft., IP 462 bbl.

BATTLE HILL—McPherson County, November, Sharon Drilling Co. 1 Crowther "A," NW SW NW 24-18-1w, Mississippi chert 2,825-34 ft., IP 1,790 bbl.

BAY, WEST — Norton County, May, Helmerich & Payne et al 1 Hansen, SW NW 26-5-21w, Arbuckle 3,650-56 ft., IP 102 bbl.

BEHRENS — Barton County, May, Solar Oil Co. 1 Behrens, N/2 SW NE 6-20-15w, Arbuckle 3,729-33 ft., IP 250 bbl.

BENSON — Pawnee County, September, Stanolind Oil & Gas Co. and Skelly Oil Co. 1 Benson, CNL NE NW 30-23-15w, Lansing-Kansas City 3,703-3,869 ft., IP 357 bbl.

CARROLL—Barton County, June, R. Gear et al 1 Carroll, SW NE SE 21-17-14w, Arbuckle 3,356-70 ft., IP 150 bbl.

CATHERINE, NORTHWEST—Ellis County, February, Max Cohan 1 Madden, NW NW NE 4-13-17w, Arbuckle 3,581-3,614 ft., IP 106 bbl.

CLARA—Barber County, March, Lion Oil & Refining Co. 1 Allen, NW NE NE 2-30-14w, Arbuckle 4,509-21 ft., gas well.

COTTON—Trego County, March, Harbar Drilling Co. and Greenburg 1 Cotton, SW SW NE 15-12-21w, Arbuckle 3,958-78 ft., IP 40 bbl.

CROMB—Ellis County, September, Darby & Bothwell 1 Cromb, NE NW NW 22-11-20w, Lansing 3,467-71 ft., IP 190 bbl.

DRACH, NORTHWEST—Stafford County, March, W. P. Faulkner 1 Hullman, NE NW NE 11-22-13w, Arbuckle 3,739-57 bbl., IP 16 bbl.

DUNDEE—Barton County, June, Champlin Refining Co. et al 1 Christianson, NE SW NE 29-20-14w, Arbuckle 3,601-11 ft., gas well.

FAIRMONT—Leavenworth County, September, Kelley et al 1 Krohne, SW NW 6-10-23e, sand 1,040-1,107 ft., gas well.

FAULKNER — Graham County, March, Wood River Oil Co. 1 Faulkner, SW SE SE 27-10-22w, Kansas City 3,629-33 ft., IP 406 bbl.

FELTES, NORTHWEST—Barton County, July, Black-Marshall 1 Miller, SW SW SE 3-16-12w, Arbuckle 3,342-45 ft., IP 117 bbl.

GREENWICH, SOUTH—Sedgwick County, November, J. P. Gaty 1 Stollie, SW SE SW 22-26-2e, Mississippi lime 2,903-09 ft., IP 467 bbl.

HAHN — Sedgwick County, September, George Fuller et al 1 Hohn, NW NW SW 22-27-1w, Kansas City 2,779-2,828 ft., IP 50 bbl.

LAWRENCE—Douglas County, February, J. M. Huber 1 Community, NW NW NW 33-12-20e, Squirrel sand 674-94 ft., gas well.

LIVENGOOD — Brown County, January, Clifton Gall 1 Livengood, NE NW NW 3-1-15e, Hunton 2,578-90 ft., IP 85 bbl.

LORETTO—Rush County, December, Eldorado Refining 1 Urban, NW NE NW 21-16-17w, Arbuckle 3,523-37 ft., gas well.

LOST SPRINGS, NORTH—Dickinson County, May, International Oil Co. 1 Doyle, E/2 NE SE 22-16-4e, Mississippi lime 2,227-2,308 ft., IP 88 bbl.

LUCK—Graham County, March, Helmerich & Payne 1 Luck, NE NE NE 13-8-22w, Kansas City 3,418-38 ft., IP 328 bbl.

McCLELLAN — Rooks County, October, Phil Han 1 McClellan, NW NW SW 9-9-19w, Lansing 3,343-48 ft., IP 185 bbl.

MANTENO—Ness County, October, Chalmette Petroleum Co. 1 Bowman, NW NW NE 31-19-25w, Mississippi lime 4,553-83 ft., IP 400 bbl.

MENTOR—Saline County, February, Mouser Drilling Co. et al 1 Carlin, NE SE

SW 13-15-3w, Viola 3,256-3,323 ft., IP 77 bbl.

NICHOLSON — Ellis County, December, Phil Han 1 Nicholson, SE SE NW 30-11-20w, Arbuckle 3,844-55 ft., IP 446 bbl.

NORTH HANNA—Butler County, October, K. T. Wiedman 1 Hoard, NE SW NE 28-29-8e, Mississippi lime 2,812-44 ft., IP 25 bbl.

N. E. MEDICINE LODGE—Barber County, December, Skelly Oil Co. 1 Boggs, NW NW NE 8-33-12w, Mississippi lime 4,472-4,593 ft., gas well.

PERTH—Sumner County, July, Carter Oil Co. 1 Latimer, NW NE 12-33-2w, Simpson 4,265-78 ft., IP 157 bbl.

PETRIE — Sedgwick County, September, British-American Oil Co. 2 Petrie, NW SW SW 36-26-1w, Viola 3,387-90 ft., IP 417 bbl.

RICHARDS, SOUTHWEST — Ellis County, April, Darby & Bothwell 1 Richards "A," SE SE SW 6-11-18w, Kansas City 3,377-88 ft., IP 100 bbl.

RYAN—Rush County, April, Inland Oil Co. 1 Peterson, SE SE SW 35-19-16w, Arbuckle 3,725-27 ft., IP 2,591 bbl.

SAND HILLS—Stafford County, February, Harbor and Ed Swearer 1 Smith, SW SW SW 19-21-11w, Arbuckle 3,550-56 ft., IP 12 bbl.

SEACAT—Cowley County, February, NW NW NW 26-33-4e, Creekmore and Rooney 1 Seacat, NW NW NW 26-33-4e, Mississippi lime 3,098-3,113 ft., IP 153 bbl.

SHADY—Pawnee County, November, Huber and Kiowa Drilling Co. 1 Katchelman, NE NE NE 34-22-16w, Simpson dolomite 4,060-4,107 ft., gas well.

STUDLEY, SOUTHWEST—Sheridan County, September, Continental Oil Co. 1 Hoxie State Bank, NE NE NE 32-8-26w, Lansing 3,758-3,832 ft., IP 280 bbl.

UNRUH—Barton County, September, Harber Drilling Co. et al 1 Unruh, NE NE NW 24-20-15w, Arbuckle 3,644-46 ft., IP 3,000 bbl.

VAL VERDE—Sumner County, April, Eldorado Refining Co. 1 Patterson, SE SE NE 23-33-2e, Bartlesville 3,263-78 ft., IP 15 bbl.

VOHS — Rooks County, July, Darby & Bothwell 1 Vohs, NE NE NE 14-10-19w, Arbuckle 3,557-62 ft., IP 380 bbl.

WEST ATHERTON—Russell County, December, Coralena 1 Olson, CSL SE SE 23-13-15w, Kansas City 3,267-78 ft., IP 29 bbl.

WEST GEUDA SPRINGS—Cowley County, December, Kanotex Refining Co. 1 Tuttle, NW SW NE 7-34-3e, Bartlesville 3,379-3,404 ft., IP 8 bbl.

NEW PAYS

FOREST HILL — Russell County, May, Harry Gore 1 Luerman, N/2 SW NE 28-15-12w, Topeka 2,825-33 ft., IP 697 bbl.

EXTENSIONS

HUGOTON—Kearny County, January, Carter Oil Co. 1 Strong, NW SE 27-22-35w, Herington-Krider 2,535-2,621 ft.; Stanton County, April, Stanolind Oil & Gas Co. 1 Campbell et al, C 31-28-39w, Permian 2,333-2,530 ft.; Stanton County, April, Stanolind Oil & Gas Co. 1 Col-Mac, C 32-30-39w, Permian 2,396-2,619 ft.; Stanton County, May, Stanolind Oil & Gas Co. 1 Fegan, C 3-27-39w, Permian 2,383-2,529 ft.; Finney County, August, SE NW NW 33-21-34w, Herington-Krider 2,537-62 ft. and 2,600-18 ft.

MARJORIE—Barber County, January, Lion Oil & Refining Co. 1 Lemon, SE NE NE 28-30-13w, Viola 4,528-45 ft., gas well; Barber County, November, Drillers Gas Co. 1 Lake, W/2 SW SW 1-31-14w, Maquoketa 4,401-09 ft., gas well.

SALINA—Saline County, May, Westgate-Greenland 1 Prescott, NW SE SW 17-14-2w, Viola 3,238-53 ft., IP 245 bbl.

SKINNER, NORTHWEST—Barber County, August, Drillers Gas Co. 1 Skinner, W/2 NW NE 16-31-14w, Maquoketa 4,340-44 ft., gas well.

ILLINOIS

KEENVILLE—Wayne County, February, Gulf Refg. 1 Anderson, NW NW NE 26-1s-5e, Aux Vases 2,980-3,013 ft., IP 11 bbl.

PASSPORT — Clay County, May, Magnolia 1 Brewster, SW SE NW 12-4n-8e, McClosky 2,998-3,032 ft., IP 3 bbl.

BROWNSVILLE — White County, March, H. H. Weinert 1 Kisner, SW NE SE 31-5s-9e, Rosiclare and McClosky, IP 187 bbl.

WILLOW HILL NORTH—Jasper County, May, Robinson & Puckett 1 Roberts, NE NE SE 26-7n-10e, McClosky 2,592,660 ft., IP 180 bbl.

ODIN—Marion County, May, Buell & Doran 1 Young, SE NE SE 12-2n-1e, Cypress sand 1,746-60 ft., IP 125 bbl.

SEMINARY—Richland County, June, J. W. Carter 1 D. C. Borah, NW NE NW 20-2n-10e, McClosky 3,199 ft., IP 224 bbl.

SHATTUC—Clinton County, June, Murphy & Conrey 1 L. Noller, NE NE NE 28-2n-1w, Cypress sand 1,279 ft., IP 25 bbl.

INGRAHAM WEST — Clay County, August, Kingwood 1 Fulk, SW SE SW 13-5n-7e, Cypress sand 2,526 ft., IP 52 bbl.

HUEY — Clinton County, August, Goldschmidt et al 1 Jentzen, SW NE NE 32-2n-2w, Benoist 1,253 ft., IP 26 bbl.

SPRINGERTON—Hamilton County, September, Carter 1-A Providence Mutual, NW NW SE 14-4s-7e, Aux Vases 3,286 ft., IP 137 bbl.

STANFORD — Clay County, September, Pure & Lynn 1 Goings, NE NE SW 24-3n-7e, McClosky 3,028 ft., IP 888 bbl.

SAMSVILLE NORTH — Edwards County, September, Central P. L. 1 Obold, NE NE NW 30-1n-14w, Benoist 2,882 ft., IP 91 bbl.

GOLDENGATE NORTH—Wayne County, November, Bell & Duncan 1 Leech, N½ NW SE 9-2s-9e, Lower O'Hara 3,319 ft., IP 122 bbl.

IOLA WEST — Clay County, January, Texas Co. 1 Jones, SE SE NW 18-5n-5e, McClosky 2,494-2,505 ft., IP 12 bbl.

MAPLE GROVE SOUTH—Edwards County, March, Aetna Oil et al 1 Greathouse, SW NE NW 23-1n-10e, Levias 3,247-3,320 ft., IP 80 bbl.

ADEN SOUTH—Hamilton County, July, Rudy 1 Marlow, NW NW SE 29-3s-7e, McClosky 3,384 ft., IP 25 bbl.

MAUNIE WEST—White County, July, B. M. Heath 1 Storms, NE NE SW 2-6s-10e, McClosky 3,038 ft., IP 38 bbl.

RURAL HILL WEST—Hamilton County, August, Tide Water 1 Johnson, SE SE NW 33-6s-5e, Aux Vases 3,222 ft., IP 33 bbl.

SHAWNEETOWN—Gallatin County, September, Ferrell 1 C. I. Oldham, NE NE NW 24-9s-9e, Aux Vases 2,648 ft., IP 19 bbl.

HUNT CITY—Jasper County, September, W. W. Shaffer 1 M. Stifel, SW NW SE 2-7n-10e, Rosiclare 2,540 ft., IP 25 bbl.

GALLAGHER — Richland County, October, Pure 1-A J. C. Howard, NW NW SW 13-2n-9e, McClosky 3,167 ft., IP 96 bbl.

PARKERSBURG NORTH—Richland County, October, Central P. L. 1 Lee Bunn, NE SW SW 28-3n-14w, McClosky 3,087 ft., IP 48 bbl.

BARTELSO WEST—Clinton County, November, Mosebach 1 J. Meyer, SW NW SW 18-1n-3w, Cypress sand 926 ft., IP 6 bbl.

MARKHAM CITY WEST—Jefferson County, November, Gulf 1 Purcell, NW SW SE 4-3s-4e, Aux Vases 2,913 ft., IP 27 bbl.

NEWTON NORTH — Jasper County, November, Schulman 1 Ben Bunton, W½ NW NE 31-7n-10e, McClosky 2,856 ft., IP 37 bbl.

SUMPTER — White County, November, Lario 1 Organ, NW NW NE 35-4s-9e, Tar Springs sand 2,567 ft., IP 33 bbl.

UNNAMED—Edwards County, May, Hageman 1 Koenecke, SW NE SE 20-1n-10e, McClosky 3,288-3,365 ft., IP 10 bbl.

MICHIGAN

ASHTON — Osceola County, September, Lupher Drilling Co. 1 Kessinger, SE SE NW 5-18n-10w, Traverse 2,945-48 ft., IP 180 bbl.

COLFAX—Mecosta County, May, Michigan Consolidated Gas Co. 1 Bush, SW 4-15n-9w, Stray sand 1,287-1,300 ft., gas well.

DOUGLASS—Montcalm County, October, Union and Barter 1 Gyger, W/2 SE NW 1-11n-7w, Dundee, 3,391-97 ft., IP 400 bbl.

DUMONT LAKE—Allegan County, August, C. W. and Charley Cook 1 Boyer, SW SE SW 32-3n-13w, Traverse 1,475-80 ft., IP 25 bbl.

ELMWOOD—Tuscola County, June, Shell Oil Co., Inc. 1 Hutchinson, NE NE NW 21-14n-10e, Monroe 2,740-60 ft., IP 5 bbl.

HARRISON—Clare County, August, Pure Oil Co. 1 Powell, N/2 SW NW 7-18n-4w, Dundee 4,223-25 ft., IP 90 bbl.

HEATH—Allegan County, August, S. L. McCall 1 Erwin, NW NW NE 35-3n-14w, Traverse 1,468-70 ft., IP 10 bbl.

OTISVILLE — Genesee County, August, Hugh Heinig 1 Elliott, W/2 NE SE 12-9n-8e, Berea 1,489-1,506 ft., IP 10 bbl.

ROCKFORD—Kent County, June, S. L. McCall 1 Hutchins and Wolven, NE NE SW 25-9n-11w, Traverse 2,204-13 ft., IP 50 bbl.

SURREY—Clare County, May, Michigan Consolidated Gas Co. 1 Frizzell, NE 23-17n-5w, Stray sand 1,461-64 ft., gas well.

WHEATLAND — Mecosta County, May, Smith Petroleum Co. 1 Ortwein, SE NW NE 7-14n-7w, Dundee, 3,684-88 ft., IP 35 bbl.

UNNAMED—Montcalm County, February, Gordon Oil Co. 1 Paris, SE NW NW 6-12n-8w, Monroe 3,542-52 ft., IP 120 bbl.

UNNAMED—Osceola County, April, Sun Oil Co. B-1 State-Cedar, S/2 NW NE 10-18n-9w, Dundee 3,945-52 ft., IP 15 bbl.

UNNAMED—Isabella County, July, J. V. Wicklund Development Co. 1 Hein, SE SE SE 13-14n-6w, Traverse 3,156-65 ft., IP 35 bbl.

UNNAMED — Clare County, September, W. C. Taggart 2 Sanford, SW 7-18n-4w, Stray sand 1,649-56 ft., gas well.

UNNAMED—Isabella County, December, Sohio Petroleum Co. 1 Brassington, SE NW SW 25-16n-5w, Stray sand 1,527-33 ft., gas well.

UNNAMED—Newago County, December, Taggart Brothers 1 Helems, SW SW SW 24-14n-11w, Stray sand 1,123-1,201 ft., gas well.

UNNAMED—Ottawa County, December, Clawson Development Co. 1 Van Bronkhorist, SW NE SW 29-5n-13w, Berea 919-933 ft., gas well.

UNNAMED — Roscommon County, October, E. V. Hilliard D-1 State, E/2 SE SE 19-21n-3w, Traverse 3,161-83 ft., IP 45 bbl.

UNNAMED—Osceola County, November, Sohio Petroleum Co. 1 Gas unit, SE NW SE 13-17n-7w, Brown lime 1,378 ft., gas well.

UNNAMED—Osceola County, November, Sun Oil Co. 1 Jaqusazewski, NW 19-17n-8w, Stray sand 1,485-92 ft., gas well.

NEW PAYS

BANGOR—Bay County, November, Gulf Refining Co. 1 Douviec, N/2 NW NE 9-14n-5e, Dundee 2,796-2,919 ft., IP 16 bbl.

CEDAR—Osceola County, July, Ohio Oil Co. 1 Boettcher, S/2 NW SE 28-18n-9w, Richfield, IP 48 bbl.

EXTENSIONS

MONTEREY, SOUTH — Allegan County, March, H. C. Williams 1 Kern, SE NW SW 24-3n-13w, Traverse 1,657-61 ft., IP 125 bbl.

ROSE CITY — Ogemaw County, August, United Drillers & Producers C-3 State, NW SE SW 34-24n-2e, Richfield, IP 200 bbl.

MISSISSIPPI

FAYETTE — Jefferson County, August, Humble Oil & Refining Co. 1 Smith, SE SE SE 12-9n-1e, Lower Tuscaloosa, Basal sand 9,730-36 ft., IP 217 bbl., 37.4-gravity.

HUB — Marion County, March, Humble Oil & Refining Co. 1 Evans, NW NE 15-2n-18w, Lower Tuscaloosa 9,127-29 ft., IP 72 bbl., 52-gravity condensate.

LANGSDALE — Clarke County, January, Kirby Petroleum Co. 1 Long Bell Petroleum Co., NW NW SW 30-1n-18e, Eutaw 3,729-39 ft., IP 156 bbl., 18.1-gravity.

QUITMAN — Clarke County, November, L. J. Roussell et al 1 Long Bell Petroleum Co., SE SW 10-2n-16e, Eutaw 3,715-17 ft., IP 37 bbl., 13.6-gravity.

SOSO—Jasper County, March, Gulf Oil Corp. 1 Edwards-Bailey unit, NE NW SE 27-10n-13w, Xmas sand, Basal Tuscaloosa, 6,590-6,600 ft., IP 98 bbl., 67-gravity, condensate.

UNNAMED — Rankin County, August,

Leonard Jones et al 1 Rainey, SW SE NE 14-5n-1e, Gas Rock (?) 2,463-66 ft., IP 40 bbl., 14.9-gravity.

ALABAMA

FALLS CITY — Winston County, April, Glen D. Rose 1 Bozhell, NW NE 18-12s-8w, Tuscumbia 1,860-70 ft., gas well.

GILBERTOWN, EAST—Choctaw County, September, Carter Oil Co. 1 Alam, approx. SW NE SW 5-10n-3w, Eutaw 3,336-3,401 ft., IP 14 bbl.

INDIANA

JEFFRIES — Posey County, July, Carter Oil Co. 1 Cox, NW SE 14-7s-14w, Tar Springs sand 2,077-80 ft., IP 84 bbl.

UNNAMED—Posey County, May, C. A. Lynch 1 Benton, NE NW 33-4s-14w, Waltersburg sand 2,154-72 ft., 2,174-86 ft., IP 15 bbl (may be extension of East Rogers field).

UNNAMED—Posey County, June, John T. Peck 1 Reineke, SW NE 12-6s-13w, Pennsylvanian sand 772-80 ft., IP 1,650,000 cu. ft. gas.

FRENCH—Spencer County, October, F. H. Rhodes 2 Montgomery-Elbe, NW SE 30-7s-7w, Tar Springs sand 1,148-60 ft., IP 1,118,000 cu. ft. gas.

UNNAMED — Ripley County, November, Seevers et al 1 Emma Schulenburg, SW 11-6n-12e, Pennsylvanian sand 612-20 ft., IP 25,000 cu. ft. gas.

EXTENSIONS

FARMERSVILLE — Posey County, January, Central States Oil et al 1 Blackburn, SW SW NW 20-6s-13w, Palestine sand 1,102-07 ft., IP 8 bbl.

ST. THOMAS—Knox County, May, Wm. P. Muller 1 Ruppel, SW SE 36-2n-11w, McClosky 1,823-33 ft., IP 125 bbl.

OHIO

CANTON—Stark County, December, Republic Steel Corp. 1 fee, Sec. 2, Clinton 4,607-96 ft., gas well.

FERNCLIFF—Muskingum County, July, South Penn Oil Co. 1 Vernon, Sec. 19, Clinton 4,180-4,226 ft., gas well.

GOSHEN—Mahoning County, July, Ohio Oil Co. 1 McCuen, Sec. 11, Oriskany 3,608-26 ft., gas well.

GRAFTON, NORTH — Lorain County, March, Hanley & Bird 1 Rose Mlazovsky, Lot 22, Clinton 2,490-2,504 ft., gas well.

HOPEWELL, NORTH—Muskingum County, May, B. G. Bartley 1 Burrier, Sec. 8, Clinton 3,241-56 ft., gas well.

PERRY, EAST—Coshocton County, February, Pure Oil Co. 1 Cullison, Sec. 10, Clinton 3,110-66 ft., gas well.

SANTOY—Perry County, April, Ohio Fuel Gas Co. 259 Sunday Creek Coal Co., Sec. 1, Clinton 3,983-4,018 ft., gas well.

STARR — Hocking County, March, Ohio Fuel Gas Co. 253 Sunday Creek Coal Co., Sec. 2, Berea 1,157-62 ft., gas well.

SULLIVAN, NORTH — Ashland County, June, Ditch & Gerig 1 Drake, Lot 33, Clinton, 2,618-25 ft. and 2,633-44 ft., gas well.

WASHINGTON—Tuscarawas County, February, Frank Lyons 1 Porter, Lot 37, Berea 950-1,010 ft. and Oriskany 3,460-70 ft., gas well.

UNNAMED—Portage County, February, Roy Week 1 Roberts, Lot 11, Clinton 3,858-3,930 ft., gas well.

UNNAMED — Muskingum County, June, Ohio Fuel Gas Co. 1 Butler, Sec. 5, Clinton 3,457-3,502 ft., gas well.

UNNAMED — Richland County, October, Ohio Fuel Gas Co. 1 Culler, Sec. 3, Clinton 2,628-35 ft., gas well.

UNNAMED—Medina County, October, H. C. Bishop 1 Rasor & Sieberling, Lot 2, Clinton 3,669-75 ft., gas well.

UNNAMED—Medina County, November, P. Ringler et al 1 Low, Sec. 8, Clinton 2,826-36 ft., gas well.

WESTERN KENTUCKY

EAST LIVERMORE—Ohio County, January, Dameron et al 1 Stagner, 25-M-30, Bethel sand 1,388-1,419 ft., IP 20 bbl.

WAVERLY—Union County, May, Ashland 1 Verona Coal Co., 7-O-21, Cypress sand 2,283-87 ft., IP 130 bbl.

DIXIE—Henderson County, May, J. L. Salee and J. W. Liles 1 fee, 21-O-22, Cypress sand 2,289-2,301 ft., IP 375 bbl.

EAST CORYDON — Henderson County, May, Fleming & Swann 1 Patterson, 1-O-22, Cypress sand 2,265-72 ft., IP 125 bbl.

EAST POOLE — Webster County, May, Sinclair Prairie 1 Cavanaugh, 12-N-23, McClosky lime 2,600-11 ft., IP 55 bbl.

ELKTON—Todd County, August, Hobson & Putnam 1 Stirvoon, 13-D-29, Devonian lime 1,389-92 ft., IP 4 bbl.

FISHTRAP FORD — Crittenden County, September, Reznik 1 Woodall, 7-K-20, Benoist sand 1,389-1,400 ft., IP 30 bbl.

EAST UNIONTOWN—Union County, October, Ryan Oil 1 Greenwell, 17-P-20, Cypress sand 2,339-50 ft., IP 210 bbl.

UNNAMED—Union County, June, Cook & Locke 1 Smith Proctor, 4-P-20, Pennsylvanian sand 908-15 ft., IP 8 bbl.

UNNAMED — Daviess County, June, Snyder & Slaughter 1 Hollis, 9-Q-30, Tar Springs sand 820-30 ft., IP 8 bbl.

UNNAMED—Henderson County, December, Basin Drlg. Co. 1 Kasey Club, 8-P-23, McClosky lime 2,440-48 ft., IP 370 bbl.

UNNAMED—Henderson County, December, Ryan Oil 1 Virginia Crafton, 9-O-24, Jackson sand 2,025-46 ft., IP 15 bbl.

UNNAMED—Daviess County, September, Sohio Pet. Co. 1 Sauer, 1-P-27, Waltersburg 1,122-31 ft., IP 591,000 cu. ft. gas.

EXTENSIONS

UTICA—Daviess County, March, Keith Tank Co. 1 Mehan, 14-N-29. McClosky 1,708-20 ft., IP 75 bbl.

STURGIS — Union County, November, Farmer & Chenault 3 W. W. Slaton, 24-M-19, Hardinsburg sand 1,352-59 ft., IP 7 bbl.

NEW PAYS

WAVERLY—Union County, June, Ashland 1 Verona Coal Co., 7-O-21, Aux Vases sand 2,536-51 ft., IP 61 bbl.

HITESVILLE — Union County, October, Carter Oil Co. 1 Weldon, 25-P-21, Aux Vases sand 2,447-64 ft., IP 63 bbl.

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Exploratory and Development Drilling—

Where It Occurred and the Results

CALIFORNIA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	18	1	1	16	99,332
February	15	0	1	14	78,875
March	12	0	0	12	65,524
April	22	2	0	20	93,842
May	16	1	0	15	69,915
June	24	0	0	24	92,726
July	33	2	0	31	135,671
August	25	1	0	24	121,228
September	16	1	0	15	77,101
October	25	1	0	24	139,227
November	17	0	0	17	58,516
December	12	1	0	11	57,675
Total	235	10	2	223	1,089,632

CALIFORNIA
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	187	167	2	18	746,878
February	169	149	3	17	628,250
March	183	164	6	13	694,818
April	195	177	5	13	727,729
May	180	161	7	12	695,844
June	126	112	0	14	463,884
July	198	171	5	22	869,772
August	160	140	7	13	638,322
September	135	115	4	16	526,599
October	140	124	5	11	598,753
November	130	105	5	20	497,523
December	112	95	5	12	492,793
Total	1,915	1,680	54	181	7,581,165

CALIFORNIA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	205	168	3	34	846,210
February	184	149	4	31	707,125
March	195	164	6	25	760,342
April	217	179	5	33	821,571
May	196	162	7	27	765,759
June	150	112	0	38	556,610
July	231	173	5	53	1,005,443
August	185	141	7	37	759,550
September	151	116	4	31	603,700
October	165	125	5	35	737,980
November	147	105	5	37	556,039
December	124	96	5	23	550,468
Total	2,150	1,690	56	404	8,670,797

CALIFORNIA
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
SAN JOAQUIN—					
Ant Hill	20	16		4	1,323
Antelope Hills	2	2			505
Bellevue	3			3	....
Belridge, North	10	7		3	3,199
Belridge, South	113	111		2	3,785
Blackwell's Cor.	6	6			135
Buena Vista Hills	151	140	1	10	52,481
Coalinga, East	59	57		2	6,331
Coalinga Nose	2	2			460
Coalinga, West	18	18			1,231
Coles Levee, North	9	8	1		3,308
Coles Levee, South	10	8		2	2,066
Edison	57	51		6	25,021
Elk Hills	223	213	2	8	61,092
Fruitvale	11	9		2	543
Gosford	2	1		1	192
Greeley	12	10		2	3,814
Helm	19	19			3,354
Jacalitos	29	26		3	5,634
Kern Front	55	44		11	2,849
Kern River	31	27		4	879
Kettleman North Dome	19	19			7,290
Lanare	13	12		1	2,082
Lost Hills	13	12		1	369
McKittrick-Cymric	35	30		5	4,969
Midway-Sunset	61	51	1	9	2,943
Mountain View	5	2		3	450
Mount Poso	35	26		9	1,142
Paloma	18	17		1	8,725
Pleasant Valley	5	5			2,363
Pyramid Hills	13	8		5	176
Race Track	10	10			3,453
Raisin City	7	7			6,258
Riverdale	8	7		1	1,012
Rosedale	3	3			134
Round Mountain	33	29		4	2,751
Santiago	5	4		1	2,871
Sheep Springs	6	3		3	826
Strand, East	2	1		1	1,410
Tejon	15	13		2	1,032
Misc. small pools	6	3		3	244
COASTAL—					
Aliso Canyon	7	7			4,692
Bradley Canyon	1			1	....
Capitan	9	9		0	4,944
Del Valle	5	4		1	2,828
Elwood	6	6			1,196
Gato Ridge	7	6		1	1,621
Newhall Potrero	6	5		1	1,561
Oak Canyon	6	5		1	731
Oxnard	2	2			146
Padre Canyon	4	4			2,439
Ramona	5	4		1	864
Rincon	15	14		1	2,045
San Martinez	8	7		1	4,438
San Miguelito	5	5			2,229
Santa Maria	18	12		6	2,524
Santa Maria Val.	81	77		4	13,956
Ventura Avenue	50	50			30,525
Ventura-Newhall	49	40		9	3,833
LOS ANGELES—					
Brea Olinda	2	2			253
Buena Park	2			2	
Coyote, East	7	7			659
Coyote, West	23	23			6,441
Dominguez	11	11			2,643
Huntington Beach	52	46	1	5	7,388
Long Beach	4	3		1	97
Montebello	8	8			683
Newport-Costa Mesa	61	49		12	4,887
Richfield	16	13		3	1,696
Rosecrans	7	7			1,010
Seal Beach	18	17		1	11,208
Torrance	47	47			2,226
Turnbull Canyon	2			2	
Whittier	4	3		1	89
Wilmington	148	148			24,093
Misc.	3	2		1	472
GAS FIELDS—					
Dixon, South	2		1	1	....
Kirby Hills	3		2	1	....
Mendota	3		3		....
Rio Vista	36		33	3	....
Rio Vista, North	4		3	1	....
Semitropic	2			2	....
Suisun	3			3	....
Thornton	2		2		....
Misc.	7		4	3	....
Wildcats	235	10	2	223	3,863
Total	2,150	1,690	56	404	376,982

CALIFORNIA
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Alameda	1	0	0	1	721
Colusa	1	0	0	1	3,560
Contra Costa	1	0	0	1	8,408
Fresno	12	0	0	12	82,652
Glenn	1	0	0	1	3,699
Imperial	2	0	0	2	15,673
Kern	102	6	0	96	430,321
Kings	5	0	0	5	25,472
Los Angeles	35	2	0	33	192,705
Madera	2	0	0	2	9,035
Merced	1	0	0	1	5,509
Monterey	1	0	0	1	5,739
Orange	5	0	0	5	20,122
Sacramento	2	0	0	2	11,942
San Benito	2	0	0	2	4,617
San Bernardino	2	0	0	2	4,367
San Joaquin	4	0	0	4	23,280
San Luis Obispo	10	0	0	10	26,705
Santa Barbara	12	0	0	12	44,919
Solando	15	0	2	13	89,854
Stanislaus	1	0	0	1	5,010
Tulare	6	0	0	6	25,152
Ventura	9	2	0	7	33,646
Yolo	3	0	0	3	16,524
Total	235	10	2	223	1,089,632

MONTANA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	2	0	1	7,238
February	2	0	0	2	4,124
March	1	1	0	0	1,479
April	5	2	0	3	16,620
May	4	1	0	3	10,099
June	2	1	0	1	5,369
July	2	0	0	2	5,181
August	6	0	0	6	22,336
September	2	0	0	2	8,578
October	5	2	0	3	13,273
November	2	1	0	1	6,429
December	1	0	0	1	2,729
Total	35	10	0	25	103,455

MONTANA
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	20	14	4	2	48,341
February	20	10	7	3	47,148
March	18	15	2	1	50,671
April	24	19	3	2	50,500
May	27	16	7	4	55,286
June	25	20	2	3	65,366
July	26	21	1	4	58,629
August	14	12	0	2	35,219
September	34	29	1	4	81,938
October	21	15	3	3	44,263
November	27	19	5	3	62,230
December	21	17	3	1	50,906
Total	277	207	38	32	650,497

MONTANA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	23	16	4	3	55,579
February	22	10	7	5	51,272
March	19	16	2	1	52,150
April	29	21	3	5	67,120
May	31	17	7	7	65,385
June	27	21	2	4	70,735
July	28	21	1	6	63,810
August	20	12	0	8	57,555
September	36	29	1	6	90,516
October	26	17	3	6	57,536
November	29	20	5	4	68,659
December	22	17	3	2	53,635
Total	312	217	38	57	753,952

MONTANA
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Bowdoin	5	0	5	0	0
Cat Creek	4	4	0	0	605

Field—	Comp.	Oil	Gas	Dry	Prod.
Cedar Creek	14	0	13	1	0
Cut Bank	109	92	8	9	5,353
Devon	8	1	6	1	40
Elk Basin	12	12	0	0	3,681
Gage	2	1	0	1	25
Hardin	4	0	4	0	0
High Gravity	8	8	0	0	541
Kevin-Sunburst	106	84	2	20	3,101
Pondera	5	5	0	0	251
Wildcats	35	10	0	25	984
Total	312	217	38	57	14,581

MONTANA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Blaine	1	0	0	1	1,036
Carbon	1	0	0	1	8,921
Glacier	4	1	0	3	13,140
Liberty	3	1	0	2	10,520
Park	1	0	0	1	3,180
Petroleum	1	1	0	0	1,394
Pondera	7	4	0	3	14,994
Powder River	1	0	0	1	8,991
Sweetgrass	1	0	0	1	6,351
Teton	1	0	0	1	3,596
Toole	13	3	0	10	25,402
Wheatland	1	0	0	1	5,930
Total	35	10	0	25	103,455

WYOMING

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	6	3	0	3	29,465
February	4	2	0	2	18,573
March	4	1	0	3	15,929
April	5	1	0	4	15,326
May	6	1	0	5	23,551
June	0	0	0	0	0
July	6	1	0	5	24,115
August	6	3	0	3	20,077
September	8	2	1	5	29,361
October	11	1	0	10	38,604
November	7	3	0	4	35,331
December	2	0	0	2	8,623
Total	65	18	1	46	258,955

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	14	14	0	0	65,247
February	8	8	0	0	37,719
March	10	9	1	0	42,555
April	14	12	0	2	67,712
May	9	9	0	0	50,073
June	9	7	1	1	39,869
July	15	14	0	1	63,246
August	14	13	0	1	53,259
September	19	17	1	1	83,487
October	11	8	2	1	45,665
November	17	13	3	1	67,236
December	22	20	1	1	92,169
Total	162	144	9	9	708,237

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	20	17	0	3	94,712
February	12	10	0	2	56,292
March	14	10	1	3	58,484
April	19	13	0	6	83,038
May	15	10	0	5	73,624
June	9	7	1	1	39,869
July	21	15	0	6	87,361
August	20	16	0	4	73,336
September	27	19	2	6	112,848
October	22	9	2	11	84,269
November	24	16	3	5	102,567
December	24	20	1	3	100,792
Total	227	162	10	55	967,192

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Badger Basin	1	1	0	0	90
Bailey	1	1	0	0	674
Big Muddy	5	4	0	1	329
Big Sand Draw	2	1	1	0	392
Byron	3	3	0	0	1,050
Cole Creek	2	2	0	0	120
Crook's Gap	2	2	0	0	8,117
Dry Piney	2	0	2	0	0
East Hiawatha	1	0	1	0	0
East Lance Creek	4	3	0	1	324
Elk Basin	37	35	0	2	20,483
Fourbear	1	1	0	0	264
Frannie	5	5	0	0	1,434
Gebo	7	6	0	1	5,353
Gooseberry	1	0	0	1	0
Garland	12	12	0	0	3,114
Grass Creek	4	3	0	1	199
Half Moon	3	3	0	0	110
Hamilton	7	7	0	0	1,957
Kirby Creek	1	1	0	0	120
Lance Creek	12	12	0	0	2,162
Little Buffalo Basin	3	3	0	0	1,452
Little Buck Creek	1	1	0	0	415
Lost Soldier	3	2	0	1	1,047
Maverick Springs	2	2	0	0	770
Notches	4	3	1	0	265
Oil Springs	2	0	2	0	0
Oregon Basin	13	13	0	0	2,696
Pitchfork	1	1	0	0	200
Rock River	1	1	0	0	125
Salt Creek	10	10	0	0	1,074
Shoshone	1	0	0	1	0
South Elk Basin	1	1	0	0	288
Steamboat Butte	4	3	1	0	1,530
Waugh	1	1	0	0	270
Winkelman	2	1	1	0	432
Wildcats	65	18	1	46	6,465
Total	227	162	10	55	63,321

WYOMING

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Albany	3	0	0	3	4,695
Big Horn	3	1	0	2	11,296
Carbon	6	1	0	5	32,138
Converse	1	0	0	1	4,584
Crook	4	0	0	4	9,400
Fremont	10	4	1	5	48,538
Hot Springs	8	3	0	5	34,456
Lincoln	1	0	0	1	1,400
Natrona	4	2	0	2	22,423
Niobrara	6	1	0	5	19,809
Park	11	3	0	8	38,542
Platte	1	0	0	1	1,469
Sublette	1	1	0	0	2,436
Sweetwater	4	2	0	2	20,950
Uinta	1	0	0	1	2,017
Weston	1	0	0	1	4,802
Total	65	18	1	46	258,955

COLORADO

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	6,100
February	1	0	0	1	1,020
March	0	0	0	0	0
April	0	0	0	0	0
May	0	0	0	0	0
June	1	1	0	0	6,242
July	1	0	1	0	5,481
August	1	0	0	1	3,505
September	3	0	0	3	13,912
October	2	0	0	2	18,292
November	2	0	0	2	7,292
December	5	0	0	5	26,338
Total	18	1	1	16	88,182

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	2	0	0	13,170
February	1	1	0	0	4,798
March	1	1	0	0	6,974
April	4	4	0	0	25,414
May	2	2	0	0	12,889
June	3	3	0	0	19,544
July	4	4	0	0	25,472
August	1	1	0	0	5,880
September	10	10	0	0	63,513
October	5	4	0	1	29,454
November	5	5	0	0	31,186
December	4	4	0	0	25,920
Total	42	41	0	1	264,214

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	4	2	0	2	19,270
February	2	1	0	1	5,818
March	1	1	0	0	6,974
April	4	4	0	0	25,414
May	2	2	0	0	12,889
June	4	4	0	0	25,786
July	5	4	1	0	30,953
August	2	1	0	1	9,385
September	13	10	0	3	77,425
October	7	4	0	3	47,746
November	7	5	0	2	38,478
December	9	4	0	5	52,258
Total	60	42	1	17	352,396

COLORADO

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
North Fort Collins	1	1	0	0	30
North McCallum	3	3	0	0	380
Powder Wash	1	1	0	0	200
Rangely	30	29	0	1	11,951
Wilson Creek	7	7	0	0	3,077
Wildcats	18	1	1	16	365
Total	60	42	1	17	16,003

COLORADO

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Baca	1	0	0	1	6,172
Bent	1	0	0	1	5,994
Boulder	1	0	0	1	1,020
Huerfano	2	0	0	2	1,033
Larimer	1	0	0	1	2,070
Mesa	1	0	0	1	11,942
Moffat	5	0	1	4	24,516
Montezuma	1	0	0	1	3,505
Prowers	1	0	0	1	5,457
Rio Blanco	2	1	0	1	12,687
Weld	2	0	0	2	13,786
Total	18	1	1	16	88,182

NORTHWEST NEW MEXICO

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	1,533
February	0	0	0	0	0
March	2	0	1	1	10,635
April	0	0	0	0	0
May	0	0	0	0	0
June	1	0	0	1	2,995
July	2	0	0	2	8,650
August	1	0	1	0	1,395
September	4	0	0	4	9,698
October	6	0	2	4	21,639
November	1	0	0	1	2,715
December	0	0	0	0	0
Total	19	0	4	15	59,260

NORTHWEST NEW MEXICO

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	2	0	4,250
February	0	0	0	0	0
March	0	0	0	0	0
April	2	0	2	0	4,043
May	1	0	1	0	2,060
June	1	0	1	0	2,185
July	0	0	0	0	0
August	0	0	0	0	0
September	0	0	0	0	0
October	1	0	1	0	2,100
November	0	0	0	0	0
December	1	0	0	1	2,100
Total	8	0	7	1	16,738

NORTHWEST NEW MEXICO

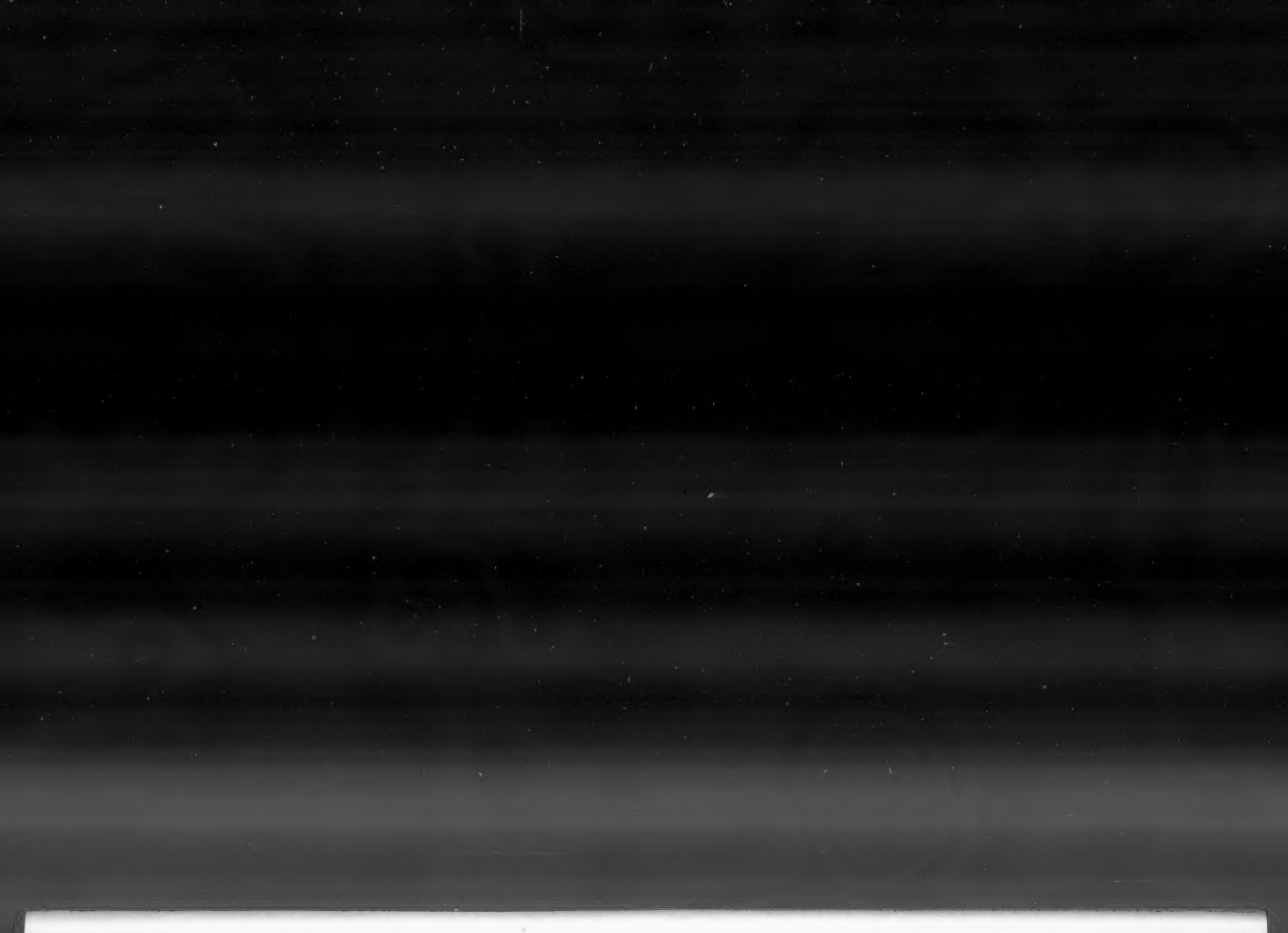
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	4	0	2	2	5,783
February	0	0	0	0	0
March	2	0	1	1	10,635
April	2	0	2	0	4,043
May	1	0	1	0	2,060
June	2	0	1	1	5,180
July	2	0	0	2	8,650
August	1	0	1	0	1,395
September	4	0	0	4	9,698
October	7	0	3	4	23,739
November	1	0	0	1	2,715
December	1	0	0	1	2,100
Total	27	0	11	16	75,998

NORTHWEST NEW MEXICO

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Barker Creek	1	0	1	0	0
Fulcher Basin	7	0	6	1	0
Wildcats	19	0	4	15	0
Total	27	0	11	16	0



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NORTHWEST NEW MEXICO
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
McKinley	3	0	0	3	12,105
Rio Arriba	1	0	0	1	705
San Juan	9	0	4	5	34,942
Santa Fe	4	0	0	4	9,513
Torrance	1	0	0	1	828
Valencia	1	0	0	1	1,167
Total	19	0	4	15	59,260

TEXAS PANHANDLE
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	0	0	0	0	0
February	1	0	0	1	4,092
March	2	0	0	2	7,652
April	0	0	0	0	0
May	1	0	0	1	7,915
June	0	0	0	0	0
July	0	0	0	0	0
August	1	0	0	1	3,468
September	0	0	0	0	0
October	1	0	0	1	6,169
November	0	0	0	0	0
December	1	0	0	1	8,514
Total	7	0	0	7	37,810

TEXAS PANHANDLE
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	40	10	29	1	123,891
February	44	21	22	1	136,683
March	47	19	25	3	151,374
April	56	13	42	1	187,901
May	32	15	16	1	100,786
June	45	16	23	6	138,465
July	47	18	28	1	150,391
August	49	14	32	3	155,506
September	51	12	34	5	156,807
October	42	16	26	0	130,943
November	35	4	31	0	104,002
December	36	18	17	1	111,299
Total	524	176	325	23	1,648,048

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TEXAS PANHANDLE
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	40	10	29	1	123,891
February	45	21	22	2	140,775
March	49	19	25	5	159,026
April	56	13	42	1	187,901
May	33	15	16	2	108,701
June	45	16	23	6	138,465
July	47	18	28	1	150,391
August	50	14	32	4	158,974
September	51	12	34	5	156,807
October	43	16	26	1	137,112
November	35	4	31	0	104,002
December	37	18	17	2	119,813
Total	531	176	325	30	1,685,858

TEXAS PANHANDLE
Development Completions by Counties

County—	Comp.	Oil	Gas	Dry	Prod.
Carson	34	17	15	2	1,619
Collingsworth	2	0	2	0	0
Gray	104	73	24	7	16,145
Hansford	71	0	67	4	0
Hartley	33	0	32	1	0
Hutchinson	89	75	13	1	7,329
Moore	126	2	123	1	294
Potter	2	0	0	2	0
Sherman	41	0	40	1	0
Wheeler	22	9	9	4	480
Wildcats	7	0	0	7	0
Total	531	176	325	30	25,867

TEXAS PANHANDLE
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Collingsworth	1	0	0	1	2,306
Dallam	2	0	0	2	9,637
Deaf Smith	1	0	0	1	7,915
Donley	1	0	0	1	4,092
Sherman	1	0	0	1	5,346
Wheeler	1	0	0	1	8,514
Total	7	0	0	7	37,810

WEST TEXAS
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	19	2	0	17	108,328
February	32	1	0	31	168,678
March	33	10	0	23	178,087
April	33	7	0	26	138,690
May	25	4	0	21	123,785
June	28	6	0	22	193,962
July	25	7	0	18	131,371
August	19	1	0	18	114,080
September	20	4	0	16	116,900
October	24	3	0	21	114,622
November	24	6	0	18	164,930
December	21	6	0	15	135,632
Total	303	57	0	246	1,689,065

WEST TEXAS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	105	96	0	9	526,307
February	124	108	0	16	565,468
March	148	136	1	11	672,378
April	113	92	3	18	513,807
May	135	112	4	19	660,293
June	144	126	1	17	673,925
July	107	93	2	12	481,327
August	105	95	2	8	499,776
September	124	117	1	6	606,231
October	89	73	2	14	466,889
November	112	87	9	16	464,439
December	131	117	1	13	676,668
Total	1,437	1,252	26	159	6,807,506

WEST TEXAS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	124	98	0	26	634,635
February	156	109	0	47	734,146
March	181	146	1	34	850,465
April	146	99	3	44	652,497
May	160	116	4	40	784,078
June	172	132	1	39	867,887
July	132	100	2	30	612,698
August	124	96	2	26	613,856
September	144	121	1	22	723,131
October	113	76	2	35	581,511
November	136	93	9	34	629,369
December	152	123	1	28	812,300
Total	1,740	1,309	26	405	8,496,573

WEST TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Alexander	4	3	0	1	185
Anton	3	3	0	0	1,047
Apco	9	7	0	2	273
Apco-Warner	5	4	0	1	4,778
Clara Couch	8	3	0	5	349
Cowden, North	37	34	0	3	7,439
Cowden, South	9	7	0	2	2,771
Crockett	7	2	1	4	207
Crossett	7	5	0	2	1,098
Dean	4	4	0	0	547
Doss	3	3	0	0	476
Eaves	4	4	0	0	764
Eden	4	0	3	1	0
Embar-Ellenburger	3	3	0	0	2,221
Emma	6	5	0	1	5,761
Emperor, Deep	4	4	0	0	409
Fuhrman-Mascho	10	9	0	1	1,690
Fullerton	199	194	0	5	125,921
Fullerton-Devonian	15	14	0	1	11,479
Foster	9	9	0	0	3,498
Fort Stockton	17	12	3	2	2,207
Funk	3	0	0	3	0
Garza	34	34	0	0	5,939
Goldsmith	12	12	0	0	5,222
Halley	5	4	0	1	1,288
Howard	3	1	0	2	106
Howard-Glasscock	47	34	0	13	2,726
Iatan-East Howard	33	31	0	2	7,907
Iatan-North Howard	6	4	0	2	430
Irion	6	3	0	3	65
Johnson	3	1	0	2	120
Jordon	3	1	1	1	204
Keystone-Colby	21	20	1	0	4,098
Keystone-Ellenburger	47	45	0	2	78,764
Keystone-Holt	16	15	0	1	7,130
Keystone-Lime	7	7	0	0	1,131
Leck	4	4	0	0	771
Lehn	8	6	0	2	175
Lion	6	1	1	4	19
McCamey	28	27	0	1	5,257
McElroy	40	35	0	5	13,370
Mabee	29	27	0	2	4,180
Mascho	11	10	0	1	2,334
Means	14	14	0	0	3,764
Midland Farms	13	13	0	0	5,797
Mcnahans	3	3	0	0	3,001
Monahans, North	3	2	0	1	319
Noelke	7	5	2	0	1,241
Olsen	12	8	0	4	853
Ownby	24	23	0	1	6,113
Pecos Valley	11	11	0	0	383
Penwell	4	3	0	1	1,209
P.H., D.	3	1	0	2	77
Russell	7	4	0	3	1,889
Sand Hills	6	6	0	0	5,293
Sand Hills-Ellenburger	5	3	0	2	2,945
Sand Hills-McKnight	5	4	0	1	1,724
Sand Hills-Tubb	35	32	1	2	32,566
Seminole	5	4	0	1	536
Shannon	10	5	0	5	2,260
Sharon Ridge	8	8	0	0	913
Shipley	5	4	0	1	178
Slaughter	178	165	1	12	95,746
Taylor-Link	5	4	0	1	500
Tobarg	5	5	0	0	345
Todd, Deep	22	22	0	0	38,366
TXL-Devonian	36	35	0	1	42,586
TXL-Ellenburger	6	6	0	0	10,682
Union, Deep	17	14	0	3	4,604
Waddell	28	28	0	0	19,698
Walker	6	5	0	1	683
Ward, North Estes	51	47	0	4	12,193
Ward, South	3	0	0	3	0
Wasson	24	22	0	2	6,262
Wasson "72"	7	7	0	0	5,129
Weiner	6	6	0	0	972
Welch	5	4	0	1	596
Westbrook	19	16	0	3	729
White & Baker	19	17	1	1	1,007
Whiteface	5	4	0	1	1,511
Wheeler-Ellenburger	5	5	0	0	2,244
Yates	12	7	0	5	529
Miscellaneous	59	29	11	19	10,537
Wildcats	303	57	0	246	23,498
Total	1,740	1,309	26	405	663,834

WEST TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Andrews	27	12	0	15	219,313
Bailey	1	0	0	1	9,127
Borden	5	0	0	5	29,782
Cochran	11	3	0	8	64,440
Ccke	1	0	0	1	1,794
Concho	3	2	0	1	11,004
Crane	13	3	0	10	89,283
Crockett	11	1	0	10	40,107
Crosby	1	0	0	1	8,517
Culberson	2	0	0	2	10,204
Dawson	3	1	0	2	18,503
Ector	11	3	0	3	87,609
Edwards	1	0	0	1	8,931
El Paso	1	0	0	1	1,578
Fisher	3	0	0	3	16,025
Floyd	1	0	0	1	6,510
Gaines	19	3	0	16	117,863
Garza	7	5	0	2	22,220
Glasscock	5	0	0	5	25,138
Hockley	9	6	0	3	49,129
Howard	12	0	0	12	52,182
Irion	2	1	0	1	17,108
Kent	4	0	0	4	23,270
Kimble	2	0	0	2	8,737
Lamb	3	1	0	2	22,657
Loving	1	0	0	1	5,253
Lubbock	7	1	0	6	50,718
Lynn	6	0	0	6	45,981
Martin	6	1	0	5	33,786
Menard	2	0	0	2	8,217
Midland	2	1	0	1	17,578
Mitchell	4	0	0	4	25,092
McCulloch	7	0	0	7	8,874
Pecos	37	4	0	33	144,369
Presidio	1	0	0	1	5,005
Reagan	3	0	0	3	16,848
Reeves	4	0	0	4	11,783
Runnels	9	2	0	7	33,500
Schleicher	2	0	0	2	12,016
Scurry	6	0	0	6	26,716
Sterling	1	0	0	1	2,875
Terry	8	1	0	7	46,496
Tom Green	3	0	0	3	13,325
Upton	9	1	0	8	56,970
Val Verde	4	0	0	4	3,405
Ward	5	2	0	3	38,310
Winkler	8	2	0	6	62,106
Yoakum	10	1	0	9	58,831
Total	303	57	0	246	1,689,065

SOUTHEASTERN NEW MEXICO

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	3	0	0	3	8,060
February	7	0	0	7	28,084
March	5	1	0	4	26,000
April	6	2	1	3	21,064
May	5	1	0	4	23,868
June	5	1	0	4	26,972
July	3	1	1	1	12,181
August	2	0	0	2	9,351
September	6	0	0	6	36,890
October	7	2	0	5	37,661
November	3	0	0	3	11,313
December	5	2	0	3	22,452
Total	57	10	2	45	263,896

SOUTHEASTERN NEW MEXICO

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	29	22	0	7	89,472
February	28	23	0	5	98,579
March	44	32	1	11	142,293
April	32	27	1	4	103,985
May	24	21	1	2	74,152
June	23	21	0	2	84,550
July	23	18	0	5	74,240
August	28	18	1	9	83,475
September	21	16	0	5	73,806
October	29	27	1	1	111,210
November	21	14	3	4	87,630
December	38	30	0	8	144,931
Total	340	269	8	63	1,168,323

SOUTHEASTERN NEW MEXICO

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	32	22	0	10	97,532
February	35	23	0	12	126,663
March	49	33	1	15	168,293
April	38	29	2	7	125,049
May	29	22	1	6	98,020
June	28	22	0	6	111,522
July	26	19	1	6	86,421
August	30	18	1	11	92,826
September	27	16	0	11	110,696
October	36	29	1	6	148,871
November	24	14	3	7	98,943
December	43	32	0	11	167,383
Total	397	279	10	108	1,432,219

SOUTHEASTERN NEW MEXICO

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Anderson	2	2	0	0	125
Artesia	21	12	0	9	1,947
Arrowhead	2	2	0	0	350
Benson	3	3	0	0	210
Caprock	18	16	0	2	2,732
Cooper-Jal	13	8	2	3	1,236
Drinkard	11	9	1	1	2,820
Empire	12	10	0	2	291
Eunice	9	9	0	0	2,499
Grayburg-Jackson	36	35	0	1	4,276
Hobbs	2	2	0	0	105
Langlie-Mattix	11	8	2	1	450
Leonard	2	2	0	0	672
Loco Hills	11	5	0	6	1,140
Lovington, West	28	24	0	4	7,663
Lovington, South	13	13	0	0	1,902
Maljamar	14	8	0	6	557
Mattix	2	2	0	0	235
Paddock	12	11	0	1	7,850
Penrose	3	2	0	1	256
Penrose-Skelly	6	5	0	1	673
Premier	3	3	0	0	182
Red Lake	26	17	1	8	1,176
Rhodes	8	8	0	0	2,156
Robinson	3	3	0	0	165
Russell	16	12	0	4	1,024
Salt Lake	3	3	0	0	257
Shugart	3	3	0	0	280
Skaggs-Deep	2	1	0	1	484
Square Lake	26	23	1	2	2,735
Turkey Track	4	1	0	3	20
Vacuum	4	3	0	1	328
Miscellaneous	11	4	1	6	286
Wildcats	57	10	2	45	3,522
Total	397	279	10	108	50,704

SOUTHEASTERN NEW MEXICO

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Chaves	4	0	0	4	14,066
De Baca	1	0	0	1	1,682
Eddy	15	0	1	14	29,106
Lea	36	10	1	25	215,664
Roosevelt	1	0	0	1	3,378
Total	57	10	2	45	263,896

WEST CENTRAL TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	7	2	0	5	22,497
February	19	2	1	16	62,242
March	12	2	1	9	33,218
April	19	1	0	18	47,001
May	10	2	1	7	31,623
June	13	2	1	10	44,920
July	13	3	0	10	40,885
August	7	1	0	6	21,401
September	9	1	0	8	32,379
October	5	0	0	5	11,934
November	11	0	0	11	47,643
December	12	2	0	10	37,911
Total	137	18	4	115	433,654

WEST CENTRAL TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	10	4	0	6	30,805
February	17	9	4	4	46,589
March	30	15	2	13	65,085
April	38	21	11	6	109,380
May	21	12	2	7	57,022
June	30	17	2	11	84,091
July	29	14	1	14	73,124
August	21	15	1	5	56,595
September	41	30	5	6	107,751
October	21	12	3	6	53,358
November	26	11	5	10	77,522
December	41	22	4	15	103,862
Total	325	182	40	103	865,164

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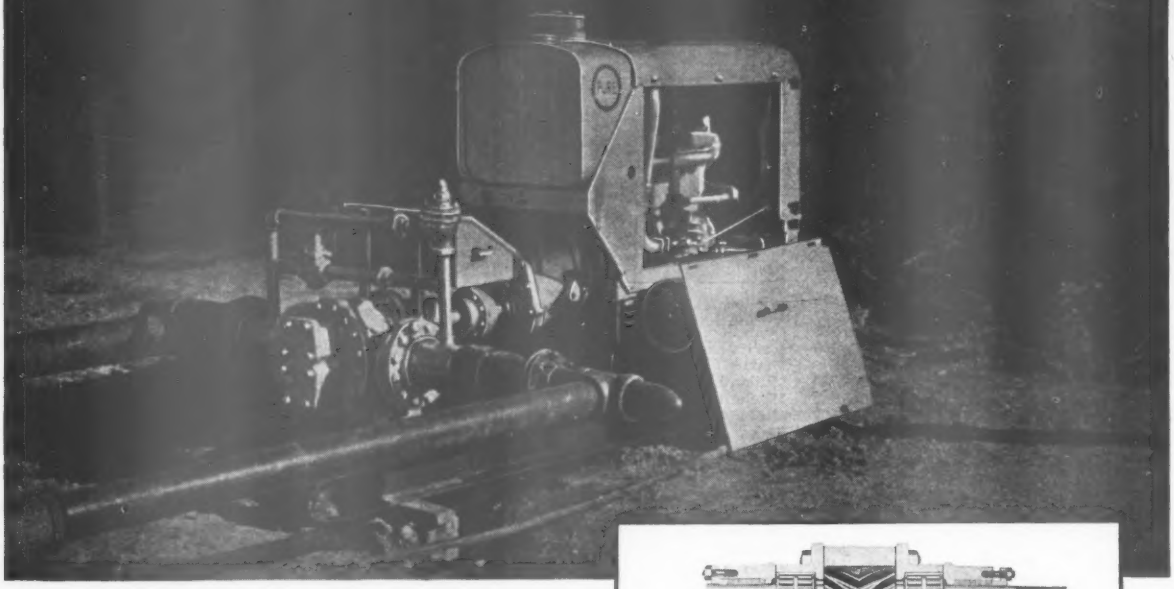
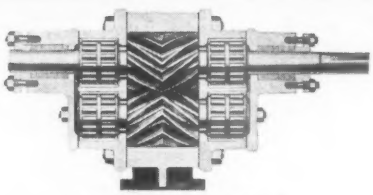


. . . because its parts are accurately mated

With every revolution of its double helical gears, a Worthington G. R. Rotary Pump delivers its unusually high percentage of oil because gears, side plates and body fit to such close tolerances that only enough oil slips by to lubricate the working parts. That makes them wear longer.

It's no wonder, then, that Worthington G. R. Rotaries are standard equipment in oil fields all over the world. A demonstration by your nearby Worthington Dealer will convince you that they're your best bet for high suction lift, lower power consumption and minimum maintenance.



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LARGE CAPACITY ROLLER BEARINGS give long life and sustained efficiency.

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SPECIAL DOUBLE HELICAL GEAR ROTORS have extra large wearing surfaces . . . free from axial thrust . . . no trapping of liquid . . . quiet and efficient.

HEAVY SIDE PLATES are accurately machined to hold bearings in place.

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ACCURATELY GROUND JOINTS require no gaskets.

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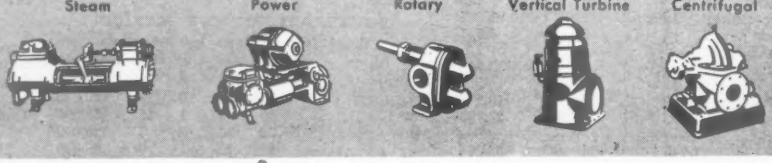
WORTHINGTON

P5-9

THE WORLD'S LARGEST MANUFACTURER OF PUMPS



WEST CENTRAL TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	17	6	0	11	53,302
February	36	11	5	20	108,811
March	42	17	3	22	96,303
April	57	22	11	24	156,381
May	31	14	3	14	88,645
June	43	19	3	21	129,011
July	42	17	1	24	114,009
August	28	16	1	11	77,996
September	50	31	5	14	140,130
October	26	12	3	11	65,292
November	37	11	5	21	125,165
December	53	24	4	25	141,773
Total	462	200	44	218	1,298,818

WEST CENTRAL TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Avoca, North	3	0	0	3	0
Brad	5	0	2	3	0
Breckenridge	4	3	0	1	29
Cisco	5	1	3	1	107
Coker	16	12	2	2	2,086
Coleman County Regular	10	4	1	5	61
Cook	10	6	0	4	216
Eastland County Regular	7	1	4	2	121
Goldsboro	2	2	0	0	243
Hilburn	2	1	0	1	43
Ibex	4	4	0	0	4,218
Jones County Regular	40	35	0	5	11,817
Lawson	3	1	0	2	579
Lewis Steffins	3	3	0	0	450
Merkel	3	3	0	0	500
Morris	2	2	0	0	61
Nail	7	3	0	4	96
Noodle, South	11	8	0	3	2,147
Pottsville	4	0	3	1	0
Reddin	30	28	0	2	35,635
Santa Anna	14	0	12	2	0
Shackelford Co. Regular	26	10	0	16	547
Sibley	3	1	1	1	2
Silver Valley	11	4	4	3	875
Stephens County Regular	17	8	1	8	1,591
Stith	3	2	0	1	1,021
Strand	2	0	0	2	0
Strawn	2	0	1	1	0
Taylor County Regular	2	1	0	1	24
Williams	16	11	2	3	3,604
Wimberly	15	14	0	1	10,412
Miscellaneous	43	14	4	25	5,320
Wildcats	137	18	4	115	1,875
Total	462	200	44	218	83,680

WEST CENTRAL TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Brown	5	0	0	5	9,267
Callahan	8	0	0	8	10,632
Coleman	22	3	2	17	67,363
Comanche	2	0	0	2	6,377
Eastland	4	0	0	4	12,454
Hamilton	3	0	0	3	11,686
Haskell	2	0	0	2	6,948
Johnson	1	0	0	1	5,903
Jones	40	9	0	31	116,714
Mills	3	0	0	3	8,378
Palo Pinto	3	0	0	3	11,339
Parker	2	0	0	2	14,393
Shackelford	10	3	1	6	24,641
Stephens	16	2	1	13	68,259
Stonewall	5	0	0	5	30,869
Taylor	11	1	0	10	28,431
Total	137	18	4	115	433,654

NORTH TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	28	5	1	22	84,227
February	37	9	0	28	118,511
March	32	8	0	24	102,255
April	38	3	0	35	94,533
May	23	1	0	22	79,669
June	42	3	0	39	113,492
July	27	6	0	21	90,703
August	30	3	0	27	65,122
September	32	6	0	26	122,072
October	29	5	0	24	93,212
November	36	3	0	33	132,598
December	42	2	0	40	150,755
Total	396	54	1	341	1,247,149

NORTH TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	101	57	2	42	241,791
February	87	56	0	31	179,279
March	101	62	0	39	251,330
April	92	72	1	19	209,206
May	102	61	0	41	271,032
June	146	90	2	54	334,542
July	116	67	4	45	267,717
August	116	79	0	37	266,413
September	151	103	1	47	373,132
October	103	71	1	31	260,497
November	90	47	0	43	200,360
December	184	122	1	61	462,934
Total	1,389	887	12	490	3,318,233

NORTH TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	129	62	3	64	326,018
February	124	65	0	59	297,790
March	133	70	0	63	353,585
April	130	75	1	54	303,739
May	125	62	0	63	350,701
June	188	93	2	93	448,034
July	143	73	4	66	358,420
August	146	82	0	64	331,535
September	183	109	1	73	495,204
October	132	76	1	55	353,709
November	126	50	0	76	332,958
December	226	124	1	101	613,689
Total	1,785	941	13	*831	4,565,382

*Includes seven service wells.

NORTH TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Almon	4	2	0	2	115
Antelope	14	13	0	1	2,133
Archer County Regular	46	31	0	15	666
Bateman	11	8	0	3	1,064
Belcherville	5	5	0	0	5,275
Bowers	11	8	0	3	1,752
Browning	3	3	0	0	489
Bryson, East	5	2	3	0	102
Bulcher	4	1	0	3	10
Burk	29	19	0	10	500
Burkburnett	3	2	0	1	28
Cherryhomes	5	2	2	1	254
Consolidated	4	2	0	2	18
Cooper	10	7	0	3	2,501
Dangle	6	2	0	4	60
Donnell	4	4	0	0	2,343
Electra & South	131	85	0	46	3,544
Ellis-Gunsight	62	40	0	22	1,012
Ellis-Strawn	9	8	0	1	2,779
Ewalt	7	4	0	3	1,604
Garvey	6	4	0	2	221
Gatewood	36	32	0	4	1,930
Henderson	16	12	0	4	1,958
Hildreth	45	39	0	6	21,760
Hoefle	5	3	0	2	937
Holliday	48	36	0	12	4,587
Hundley	5	4	0	1	3,945
James	4	2	0	2	70
Johnson	5	4	0	1	6,812
Joy	21	17	0	4	2,515
Kinder	3	1	0	2	368
K.M.A.	87	66	0	21	4,174
Knox	12	8	1	3	1,628
Krohn	5	4	0	1	522
Luke	3	3	0	0	1,588
Lupton	4	3	0	1	238
McDonald	7	5	0	2	156
McKeichen	12	5	0	7	59
McNutt	3	3	0	0	1,960
Madden	12	11	0	1	3,829
Markley	3	0	0	3	0
Mathis	3	3	0	0	744
Matlock	3	2	0	1	1,498
Megargel	6	6	0	0	41
Muenster	16	11	0	5	148
National	4	4	0	0	2,280
Nichols	4	2	0	2	140
Nocona & Deep	18	14	0	4	900
Odell	9	4	0	5	2,333
Olney	6	3	0	3	23
Osburn	9	6	0	3	322
Prideaux	7	4	0	3	476
Richardson	5	1	0	4	105
Ringgold	8	7	0	1	3,411
Risch	7	5	1	1	1,089
Rock Crossing	13	8	0	5	1,341
Ross	7	4	0	3	1,204
Ross Ranch	5	4	0	1	3,577
Sewell	13	6	1	6	886
Sivell's Bend	7	6	0	1	2,995
Sunshine Hill	9	5	0	4	36
Swastika	15	6	0	9	51
Taylor	3	0	0	3	0
Thomas	19	15	0	4	166
Thornberry	62	49	0	13	1,199
Votsberger	17	12	0	5	2,400
Walnut Bend	17	14	0	3	3,292
West	11	8	0	3	1,026
Wilson	22	18	0	4	1,394
Wood Bend Conglomerate	6	4	0	2	1,494
Woodbine	4	3	0	1	186
Young County Shallow	11	4	0	7	36
Miscellaneous	328	139	4	185	5,186
Wildcats	396	54	1	341	20,346
Total	1,785	941	13	831	145,831

NORTH TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Archer	107	6	0	101	229,169
Baylor	3	0	0	3	8,050
Childress	3	0	0	3	17,982
Clay	37	6	0	31	172,153
Cooke	69	7	0	62	194,103
Cottle	2	0	0	2	11,580
Denton	2	0	0	2	4,355
Foard	3	0	0	3	16,607
Grayson	4	0	0	4	20,941
Jack	26	8	0	18	111,653
King	6	0	0	6	36,731
Knox	1	0	0	1	4,510
Montague	16	7	0	9	78,436
Throckmorton	23	2	0	21	51,115
Wichita	44	4	0	40	105,596
Wilbarger	7	2	0	5	28,296
Wise	2	0	0	2	8,278
Young	41	12	1	28	147,594
Total	396	54	1	341	1,247,149

EAST TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	7	3	0	4	49,114
February	8	0	0	8	57,861
March	11	4	0	7	81,274
April	11	0	0	11	69,148
May	4	0	0	4	21,821
June	11	1	0	10	44,146
July	11	2	0	9	70,415
August	2	1	0	1	13,989
September	12	0	1	11	79,693
October	9	1	0	8	56,489
November	8	2	0	6	45,914
December	10	0	0	10	44,348
Total	104	14	1	89	634,212

EAST TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	13	6	3	4	87,089
February	13	6	6	1	94,511
March	21	8	10	3	145,139
April	17	6	7	4	117,908
May	17	11	6	0	115,582
June	24	14	7	3	161,149
July	21	5	9	7	118,758
August	17	9	6	2	112,978
September	30	8	14	8	193,859
October	31	16	12	3	190,693
November	41	18	22	1	248,090
December	52	36	12	4	284,362
Total	297	143	114	40	1,870,118

EAST TEXAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	20	9	3	8	136,203
February	21	6	6	9	152,372
March	32	12	10	10	226,413
April	28	6	7	15	187,056
May	21	11	6	4	137,403
June	35	15	7	13	205,295
July	32	7	9	16	189,173
August	19	10	6	3	126,967
September	42	8	15	19	273,552

Month—	Comp.	Oil	Gas	Dry	Footage
October	40	17	12	11	247,182
November	49	20	22	7	294,004
December	62	36	12	14	328,710
Total	401	157	115	*129	2,504,330

*Includes four service wells.

EAST TEXAS
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Bethany	3	0	3	0	0
Calvert	11	7	1	3	1,055
Carthage	95	2	91	2	109
Cayuga	2	1	1	0	160
Chapel Hill	4	4	0	0	427
Grapeland	3	0	3	0	0
Hawkins	42	42	0	0	11,999
Henderson	8	6	2	0	964
Jefferson	3	2	0	1	433
Lone Star	3	2	0	1	576
Long Lake	12	7	1	4	767
Myrtle Springs	2	1	0	1	29
Kerens	2	0	1	1	0
Manziel	3	1	2	0	551
Merigale	9	7	0	2	3,518
Navarro Crossing	2	1	1	0	102
New Hope	20	16	0	4	3,542
Opelika	2	0	2	0	0
Pickton	13	11	0	2	7,163
Pittsburgh	6	3	0	3	234
Quitman	8	6	0	2	3,015
Rodessa	3	0	3	0	0
Sand Flat	10	8	0	2	3,448
Shelbyville	3	0	0	3	0
South Tyler	3	1	0	2	292
Van	2	2	0	0	145
Winnsboro	8	7	0	1	2,967
Miscellaneous	15	7	2	6	3,928
Wildcats	104	13	2	89	1,393
Total	401	157	115	129	46,817

EAST TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Anderson	1	0	0	1	5,518
Angelina	1	0	0	1	7,212
Bowie	2	0	0	2	11,326
Camp	3	0	0	3	25,116
Cass	2	0	0	2	14,955
Cherokee	7	1	0	6	52,586
Falls	1	0	0	1	7,606
Franklin	2	0	0	2	14,668
Freestone	5	3	0	2	32,554
Harrison	8	3	0	5	56,863
Henderson	5	1	0	4	37,825
Hill	1	0	0	1	580
Hopkins	5	2	0	3	38,932
Houston	7	0	0	7	36,336
Hunt	6	0	0	6	27,804
Kaufman	1	0	0	1	3,065
Leon	5	0	0	5	27,639
Limestone	1	0	0	1	5,569
Marion	1	0	0	1	2,861
Morris	1	0	0	1	6,590
Nacogdoches	2	0	0	2	9,387
Navarro	6	0	0	6	22,591
Panola	4	0	1	3	27,627
Red River	1	0	0	1	8,232
Robertson	5	0	0	5	9,516
Rusk	5	1	0	4	23,295
Shelby	5	0	0	5	32,380
Titus	1	0	0	1	11,835
Trinity	1	0	0	1	3,213
Upshur	3	0	0	3	21,847
Van Zandt	3	2	0	1	24,779
Wood	3	1	0	2	21,905
Total	104	14	1	89	634,212
Total	1,740	1,309	26	405	8,496,573

SOUTH CENTRAL TEXAS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	9	3	0	6	36,418
February	11	3	1	7	55,245
March	13	7	0	6	73,277
April	6	2	0	4	31,707
May	14	3	1	10	67,440
June	18	5	0	13	86,760
July	13	4	0	9	38,467
August	10	2	0	8	46,846
September	16	3	1	12	73,984
October	12	3	1	9	39,029
November	9	2	1	6	37,349
December	12	6	0	6	56,359
Total	143	42	5	96	642,881

SOUTH CENTRAL TEXAS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	4	3	0	1	25,223
February	4	3	0	1	26,245
March	10	7	•0	3	47,716
April	4	1	0	3	22,705
May	5	3	1	1	21,315
June	7	5	0	2	34,256
July	6	4	0	2	21,085
August	2	2	0	0	9,185
September	5	3	0	2	24,016
October	3	2	1	0	19,587
November	2	2	0	0	9,931
December	8	6	0	2	38,873
Total	60	41	2	17	300,137

SOUTH CENTRAL TEXAS
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	5	0	0	5	11,195
February	7	0	1	6	29,000
March	3	0	0	3	25,561
April	2	1	0	1	9,002
May	9	0	0	9	46,125
June	11	0	0	11	52,504
July	7	0	0	7	17,382
August	8	0	0	8	37,661
September	11	0	1	10	49,968
October	9	0	0	9	19,442
November	7	0	1	6	27,418
December	4	0	0	4	17,486
Total	83	1	3	79	342,744

SOUTH CENTRAL TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Atascosa	6	0	0	6	41,653
Bastrop	12	0	0	12	42,032
Bexar	2	0	0	2	5,638
Dimmit	5	0	2	3	24,792
Frio	1	0	0	1	8,600
Gillespie	1	0	0	1	700
Gonzales	1	0	0	1	4,217
Guadalupe	3	0	0	3	8,079
Kerr	3	0	0	3	15,456
Kimble	1	0	0	1	4,473
LaSalle	7	0	0	7	28,862
McMullen	22	0	0	22	106,817
Medina	1	0	0	1	3,194
Milam	5	0	0	5	6,953
Travis	1	0	0	1	1,459
Val Verde	3	0	0	3	5,680
Williamson	4	0	0	4	5,193
Wilson	3	1	0	2	21,508
Zavala	2	0	1	1	7,438
Total	83	1	3	79	342,744

SOUTH CENTRAL TEXAS
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Charlotte	8	6	0	2	489
Dunlap	3	3	0	0	187
Ezzell	7	6	0	1	180
Imogene	15	12	0	3	908
Loma Alta	5	5	0	0	497
Pearsall	3	3	0	0	176
South Campana	5	4	1	0	248
Miscellaneous	14	2	1	11	23
Wildcats	83	1	3	79	127
Total	143	42	5	96	2,835

SOUTH TEXAS
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	15	1	1	13	60,413
February	9	1	1	7	39,284
March	6	1	0	5	28,399
April	8	1	0	7	34,001
May	6	0	0	6	21,160
June	12	0	2	10	44,534
July	8	2	0	6	30,208
August	9	0	0	9	47,724
September	10	0	1	9	27,302
October	5	1	0	4	12,489
November	7	0	1	6	29,411
December	13	1	0	12	50,214
Total	108	8	6	94	425,139

SOUTH TEXAS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	15	11	1	3	56,381
February	25	14	3	8	105,886
March	42	32	3	7	173,487
April	36	25	2	9	133,182
May	24	16	2	6	97,341
June	32	15	6	11	116,522
July	23	14	2	7	91,862
August	22	11	2	9	85,038
September	30	14	5	11	114,687
October	21	16	1	4	91,165
November	23	15	1	7	79,306
December	11	7	2	2	41,199
Total	304	190	30	84	1,186,056

SOUTH TEXAS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	30	12	2	16	116,794
February	34	15	4	15	145,170
March	48	33	3	12	201,886
April	44	26	2	16	167,183
May	30	16	2	12	118,501
June	44	15	8	21	161,056
July	31	16	2	13	122,070
August	31	11	2	18	132,762
September	40	14	6	20	141,989
October	26	17	1	8	103,654
November	30	15	2	13	108,717
December	24	8	2	14	91,413
Total	412	198	36	178	1,611,195

SOUTH TEXAS
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Agua Prieta	8	7	1	0	488
Armstrong	14	13	1	0	1,405
Aviators	7	5	0	2	106
Boyle	13	9	2	2	766
Cadena	8	4	1	3	298
Cameron	6	3	1	2	343
Conoco-Driscoll	6	5	0	1	621
East Longhorn	3	3	0	0	323
Garcia	55	36	7	12	3,850
Glen	3	2	0	1	25
Gormac	13	8	1	4	723
Herbst	3	1	0	2	52
Ira	3	2	0	1	73
Lefevre	4	1	0	3	278
Longhorn	5	2	0	3	184
Lundell	4	1	2	1	21
McLean	3	1	0	2	56
Neuhaus	3	1	0	2	11
North Rincon	20	15	3	2	1,913
North Sun	3	3	0	0	210
Richardson	9	8	0	1	218
Rincon	4	3	0	1	148
Robinson	11	6	1	4	268
Ross	18	10	1	7	560
Sejita	3	2	0	1	255
South Bruni	3	2	0	1	25
South Eagle Hill	3	0	0	3	0
Southland-Longhorn	14	13	1	0	1,017
Staggs	6	1	3	2	16
Strake	5	4	0	1	540
Sweden	7	6	1	0	1,128
Thomas-Lockhart	5	4	0	1	263
Yturria	4	3	0	1	213
Miscellaneous	28	6	4	18	269
Wildcats	108	8	6	94	559
Total	412	198	36	178	17,225

SOUTH TEXAS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Duval	33	3	2	28	151,311
Jim Hogg	13	1	1	11	49,642
Starr	30	2	2	26	105,195
Webb	22	1	0	21	83,904
Zapata	10	1	1	8	35,087
Total	108	8	6	94	425,139

LOWER GULF COAST TEXAS
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	18	2	0	16	115,919
February	17	2	2	13	129,845
March	24	9	2	13	182,446
April	11	1	0	10	60,718
May	8	1	0	7	45,893
June	14	0	2	12	99,683
July	13	1	6	6	99,791
August	11	2	1	8	67,305
September	19	1	3	15	114,095
October	10	1	1	8	58,006

AND SAFETY IN DEEP HOLE DRILLING

HIGH RUNNING SPEED—You can develop and maintain it with Republic Electric Weld Casing. Clean, accurate threads on pipe ends and in couplings make stabbing, spinning and tonging of joints easier and faster.

GREATER SAFETY—There are three important reasons for the high safety factor in Republic Electric Weld Casing. (1) Republic's *improved* electric weld process together with full normalizing insures *uniform* strength throughout every inch of wall and weld. (2) Roundness, as perfect as is mechanically possible to obtain, increases resistance to collapse. (3) Plenty of metal under the base of the threads increases the high joint strength needed for long casing strings.

With wells going deeper and deeper, you need all of the speed and safety you can obtain. The performance records of more than 100,000,000 feet of Republic Electric Weld Casing, produced in the past sixteen years, provide strong proof that this *modern* casing is unsurpassed on either of these counts.

There are other reasons, too, why cost-wise oil country men prefer to work with field-proved Republic Electric Weld Casing. For complete information, write to:

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GENERAL OFFICES • • CLEVELAND 1, OHIO
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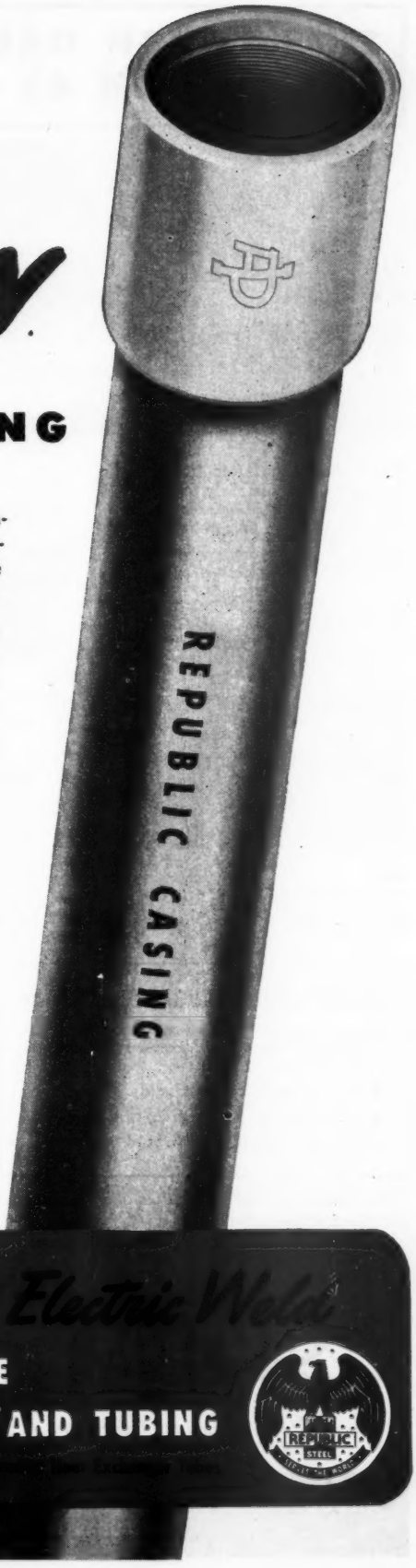
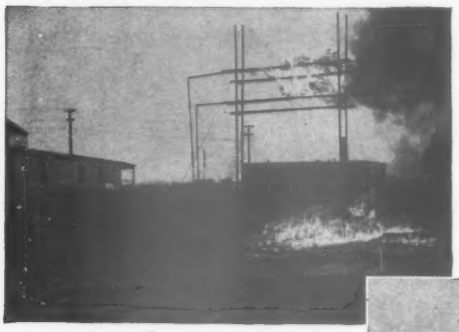


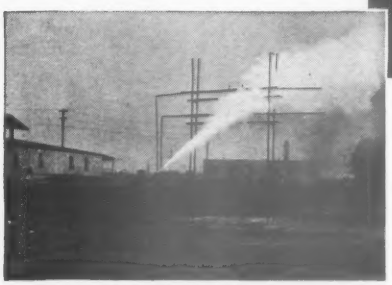
Other Republic Products include

THIS TOUGH GASOLINE FIRE KILLED IN 65 SECONDS

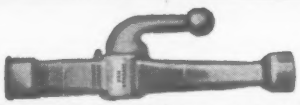


9:15 A.M. . . . Gasoline escaping at rate of 10 gallons per minute under 50 lb. pressure through three hacksaw cuts in pipe 13 ft. above ground is "touched off."

9:16 A.M. . . . After being allowed to burn furiously for a full minute, the *straight-stream* of the new Dual-Stream Nozzle of a No. 350-A Wheeled Extinguisher is directed at blaze.



9:17:05 A.M. . . . In just 65 seconds, this tough overhead gasoline fire (including blaze on ground) is OUT.

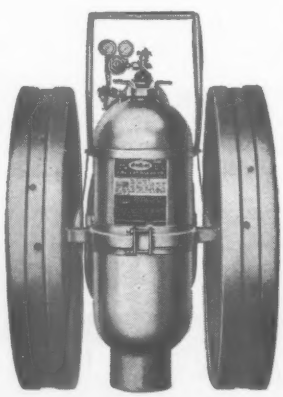


NEW DUAL-STREAM NOZZLE deals effectively with spill fires difficult to reach because of height or obstructions. Designed for use with DUGAS Wheeled Extinguishers, the new Dual-Stream Nozzle greatly increases fire-fighting range and effectiveness. A turn of the handle gives a *straight* stream with a range of 45 ft.—or a *fan* stream with a range of 15 ft.

Quick Facts about DUGAS Dry Chemical

- For extra-hazardous fires involving flammable gases, liquids, greases or electrical equipment.
- Not an electrical conductor.
- Non-toxic, non-corrosive, non-abrasive.
- Not affected by extreme cold or heat.

Write today for complete information regarding DUGAS Wheeled Extinguishers with the New Dual-Stream Nozzle. . . and DUGAS Hand Extinguishers.



DUGAS 350-A WHEELED EXTINGUISHER

AN ANSUL PRODUCT
duGas
THE MASTER OF FLAME

Approved by Underwriters' Laboratories, Factory Mutual Laboratories

ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN
DUGAS DIVISION

Month—	Comp.	Oil	Gas	Dry	Footage
November	21	3	1	17	152,314
December	21	4	1	16	141,211
Total	187	27	19	141	1,267,226

LOWER GULF COAST TEXAS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	48	37	4	7	303,581
February	50	34	7	9	303,829
March	55	42	7	6	354,675
April	58	43	8	7	378,671
May	61	46	7	8	394,996
June	65	55	5	5	410,748
July	60	46	9	5	392,681
August	54	42	5	7	389,951
September	57	43	3	11	367,409
October	70	56	7	7	470,361
November	68	52	7	9	449,738
December	66	53	6	7	426,842
Total	712	549	75	88	4,623,482

LOWER GULF COAST TEXAS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	66	39	4	23	419,500
February	67	36	9	22	433,674
March	79	51	9	19	537,121
April	69	44	8	17	439,389
May	69	47	7	15	440,889
June	79	55	7	17	510,431
July	73	47	15	11	492,472
August	65	44	6	15	437,256
September	76	44	6	26	481,504
October	80	57	8	15	528,367
November	89	55	8	26	602,052
December	87	57	7	23	568,053
Total	899	576	94	229	5,890,708

LOWER GULF COAST TEXAS
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Agua Dulce	43	25	10	8	3,878
Alta Mesa	7	5	0	2	586
Blucher	4	3	1	0	1,112
Bonnie View	27	26	0	1	2,188
Boyce	5	5	0	0	689
Brayton	10	9	1	0	1,531
Burnell-Wilcox	7	6	1	0	593
Cabeza Creek	4	2	0	2	452
Canales	14	13	0	1	2,530
Coy City	4	2	0	2	159
Dial	3	1	0	2	37
E. White Point	8	4	1	3	668
Falls City	17	16	0	1	2,489
Greta	5	4	1	0	324
Heard	5	5	0	0	606
Hysaw	3	3	0	0	253
Kelsey	16	16	0	0	2,538
Koontz	4	3	1	0	97
La Gloria	13	10	1	2	1,829
Magnolia City	3	3	0	0	261
Mariposa	2	2	0	0	183
McFaddin	6	2	4	0	64
Midway	5	3	0	2	249
Mineral	3	1	2	0	97
Naylor	2	1	0	1	26
New Refugio	6	6	0	0	739
N. Magnolia City	9	8	0	1	2,099
N. McFaddin	2	1	0	1	119
Oakville-Wilcox	4	2	0	2	205
Odem	2	1	1	0	150
Petronilla	2	2	0	0	196
Placedo	2	1	1	0	40
Pridham's Lake	11	6	2	3	360
Quinto Creek	3	1	1	1	27
Refugio-Fox	7	3	2	2	314
Ricardo	4	2	1	1	184
Richard King	5	2	2	1	162
Riverside	5	5	0	0	419
Rooke	11	7	2	2	753
Runge	8	6	1	1	817
Saxet	2	1	0	1	150
Scott & Hopper	7	3	2	2	384
Seeligson	111	106	3	2	18,953
Slick-Wilcox	14	11	0	3	1,744
South Caesar	4	3	1	0	142
South Tulsita	3	2	1	0	153
Stratton	45	42	1	2	5,463
Terrell Point	3	2	1	0	131
Theis	2	2	0	0	165
Tijerina	40	40	0	0	8,135
Tom O'Connor	6	5	0	1	722
Tuleta	2	2	0	0	160
White Point	2	1	0	1	75
Willamar	78	69	2	7	10,801

Field—	Comp.	Oil	Gas	Dry	Prod.
Willmann	8	7	0	1	843
Yougeen	13	8	4	1	490
Miscellaneous	71	22	24	25	1,586
Wildcats	187	27	19	141	4,036
Total	899	576	94	229	84,056

LOWER GULF COAST TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Bee	19	2	2	15	96,674
Brooks	16	3	2	11	112,522
Calhoun	5	1	0	4	41,069
Cameron	2	0	0	2	19,736
DeWitt	4	0	1	3	32,940
Goliad	9	3	1	5	68,821
Hidalgo	10	0	1	9	79,648
Jim Wells	12	1	1	10	70,407
Karnes	20	5	0	15	122,727
Kenedy	1	0	0	1	10,606
Kleberg	9	3	1	5	74,519
Live Oak	8	3	0	5	47,926
Nueces	11	0	1	10	83,150
Refugio	9	1	1	7	62,592
San Patricio	25	2	3	20	159,785
Victoria	22	1	5	16	128,169
Willacy	5	2	0	3	55,935
Total	187	27	19	141	1,267,226

UPPER GULF COAST TEXAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	13	0	3	10	88,212
February	15	4	2	9	125,699
March	15	4	0	11	115,749
April	12	4	0	8	88,740
May	21	5	2	14	155,862
June	23	1	1	21	159,402
July	19	4	0	15	133,115
August	24	4	1	19	188,486
September	25	8	0	17	193,275
October	16	3	0	13	111,375
November	17	6	1	10	133,866
December	27	6	0	21	173,627
Total	227	49	10	168	1,667,403

UPPER GULF COAST TEXAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	46	32	5	9	350,254
February	41	28	2	11	280,611
March	75	58	5	12	498,665
April	46	26	4	16	334,823
May	50	31	4	15	371,173
June	54	41	3	10	374,759
July	39	23	4	12	270,936
August	38	24	1	13	277,101
September	59	41	4	14	414,839
October	45	20	4	21	290,410
November	44	28	1	15	294,446
December	58	36	9	13	373,658
Total	595	388	46	161	4,131,675

UPPER GULF COAST TEXAS

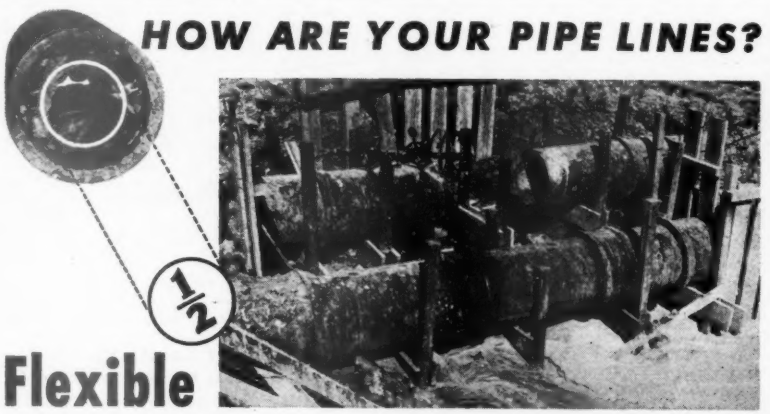
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	59	32	8	19	438,466
February	56	32	4	20	406,310
March	90	62	5	23	614,414
April	58	30	4	24	423,563
May	71	36	6	29	527,035
June	77	42	4	31	534,161
July	58	27	4	27	404,051
August	62	28	2	32	465,587
September	84	49	4	31	608,114
October	61	23	4	34	401,785
November	61	34	2	25	428,312
December	85	42	9	34	547,285
Total	822	437	56	329	5,799,083

UPPER GULF COAST TEXAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Abel Borden	3	0	0	3	0
Alief	2	1	1	0	100
Altair	2	2	0	0	659
Arnim	8	3	0	5	146
Barber's Hill	2	2	0	0	370
Beech Creek	2	1	0	1	480
Big Creek	4	2	0	2	400
Blue Lake	13	7	0	6	2,749
Boling	7	1	1	5	359
Chesterville	2	2	0	0	190



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Hermetically sealed mercury switch is used. They cannot be affected by dust, dirt or corrosion; nor are they subject to open arcing, oxidation, pitting or sticking of contacts, all common causes of contact trouble. This switch will give better control service and longer control life.

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The Bourdon tube is the actuating element of the control. It is the oldest known, tried and proven element, having been used in gauges for many years.

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The outside double adjustment with the calibrated dial and pointers is a convenient feature, making it very easy to set the required operating range, plainly visible on the dial. All guesswork is eliminated.

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THE ASSURANCE OF DEPENDABLE SERVICE BUILT IN EVERY MERCOID CONTROL

Field—	Comp.	Oil	Gas	Dry	Prod.
Chocolate Bayou	14	12	0	2	2,449
Cistern	9	3	0	6	41
Clam Lake	2	2	0	0	272
Daboval	7	3	1	3	292
Danbury	9	4	2	3	1,055
Dyersdale	9	7	0	2	519
El Campo	5	4	0	1	483
Fannett	32	22	4	6	6,369
Fig Ridge	14	12	2	0	3,884
Francitas	5	5	0	0	483
Ganado	6	2	1	3	115
Gillock	3	1	1	1	32
Goose Creek	5	4	0	1	273
Harmon	3	2	0	1	139
Hastings	2	1	0	1	476
High Island	6	4	0	2	2,029
Hillje	4	2	0	2	167
Hull	4	2	1	1	259
Humble	14	5	0	9	356
Hungerford	4	0	2	2	0
Jackson Pastures	2	1	1	0	239
Joyce					
Richardson	2	2	0	0	185
Katy	16	14	0	2	1,186
Kirby	6	3	1	2	362
LaBelle	3	1	2	0	255
Lake Creek	5	3	1	1	329
Lane City	5	5	0	0	611
LaSalle	7	6	1	0	451
Livingston	38	35	0	3	10,010
Lochridge	2	2	0	0	154
Lolita	8	8	0	0	1,863
Lost Lake	2	1	1	0	50
Lovell Lake	7	5	0	2	328
Markham	5	2	1	2	546
Maurbro	7	5	2	0	508
Mayes	9	6	0	3	2,995
Mayo	6	5	0	1	253
Moody Ranch	3	1	0	2	64
Moore	4	1	0	3	61
Needville	9	7	2	0	1,477
North Bay City	4	3	0	1	484
North Katy	8	8	0	0	606
North La Ward	4	2	0	2	95
N. Lovell Lake	7	5	0	2	462
North Markham	3	2	0	1	283
North Stowell	5	3	1	1	1,051
North Winnie	4	2	2	0	572
North Withers	11	10	1	0	1,562
Old Ocean	11	9	0	2	3,458
Pierce Junction	4	2	0	2	438
Pinehurst	2	2	0	0	538
Pledger	2	1	0	1	24
Port Neches	3	3	0	0	191
Red Fish Reef	4	3	0	1	266
Seabreeze	2	2	0	0	693
Segno	4	3	0	1	180
Sheridan	7	7	0	0	1,542
Silsbee	11	11	0	0	1,825
Smith Point	8	6	0	2	1,302
Sour Lake	19	11	0	8	1,234
South Esperson	3	2	0	1	294
Southeast					
Fannett	7	7	0	0	1,588
South Hillje	2	1	0	1	160
Spring	4	4	0	0	480
Stowell	15	11	0	4	3,234
Village Mills	3	1	0	2	108
Webster	3	3	0	0	1,513
West Columbia	4	3	0	1	1,263
West Ranch	16	15	0	1	2,433
Miscellaneous	67	15	14	38	1,659
Wildcats	227	49	10	168	7,810
Total	822	437	56	329	84,421

UPPER GULF COAST TEXAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Austin	5	2	0	3	41,266
Brazoria	21	4	0	17	150,709
Brazos	1	0	0	1	16,655
Chambers	14	3	0	11	128,833
Colorado	11	7	1	3	100,140
Fayette	6	1	0	5	23,278
Fort Bend	15	2	0	13	101,675
Galveston	1	1	0	0	6,897
Grimes	2	0	0	2	6,815
Hardin	8	5	0	3	54,345
Harris	20	4	0	16	144,292
Jackson	26	1	2	23	152,594
Jefferson	8	1	0	7	73,684
Lavaca	7	2	0	5	61,453
Liberty	11	3	1	7	86,915
Matagorda	14	3	0	11	109,446
Montgomery	5	1	0	4	39,740
Newton	1	1	0	0	9,009
Orange	6	0	0	6	54,596
Polk	3	0	0	3	16,263
San Jacinto	6	2	0	4	52,324
Tyler	5	1	0	4	38,031
Walker	1	0	0	1	7,254
Washington	3	0	0	3	20,337
Wharton	27	5	6	16	170,857
Total	227	49	10	168	1,667,408

SOUTH LOUISIANA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	7	2	0	5	78,165
February	3	2	0	1	31,306
March	8	2	0	6	82,368
April	4	1	0	3	41,963
May	6	2	0	4	64,217
June	10	1	0	9	107,892
July	4	1	0	3	45,913
August	5	2	0	3	56,609
September	8	2	0	6	70,653
October	5	1	0	4	50,409
November	7	5	0	2	76,398
December	7	3	0	4	66,559
Total	74	24	0	50	772,452

SOUTH LOUISIANA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	41	31	1	9	391,499
February	43	34	1	8	381,186
March	49	36	1	12	454,884
April	53	35	2	16	460,032
May	34	21	0	13	304,155
June	67	51	2	14	606,490
July	35	27	0	8	332,572
August	40	28	1	11	375,617
September	47	31	1	15	423,442
October	39	31	3	5	346,427
November	43	23	0	20	388,303
December	50	35	7	8	420,734
Total	541	383	19	139	4,885,341

SOUTH LOUISIANA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	48	33	1	14	469,664
February	46	36	1	9	412,492
March	57	38	1	18	537,252
April	57	36	2	19	501,995
May	40	23	0	17	368,372
June	77	52	2	23	714,382
July	39	28	0	11	378,485
August	45	30	1	14	432,226
September	55	33	1	21	494,095
October	44	32	3	9	396,836
November	50	28	0	22	464,701
December	57	38	7	12	487,293
Total	615	407	19	189	5,657,793

SOUTH LOUISIANA

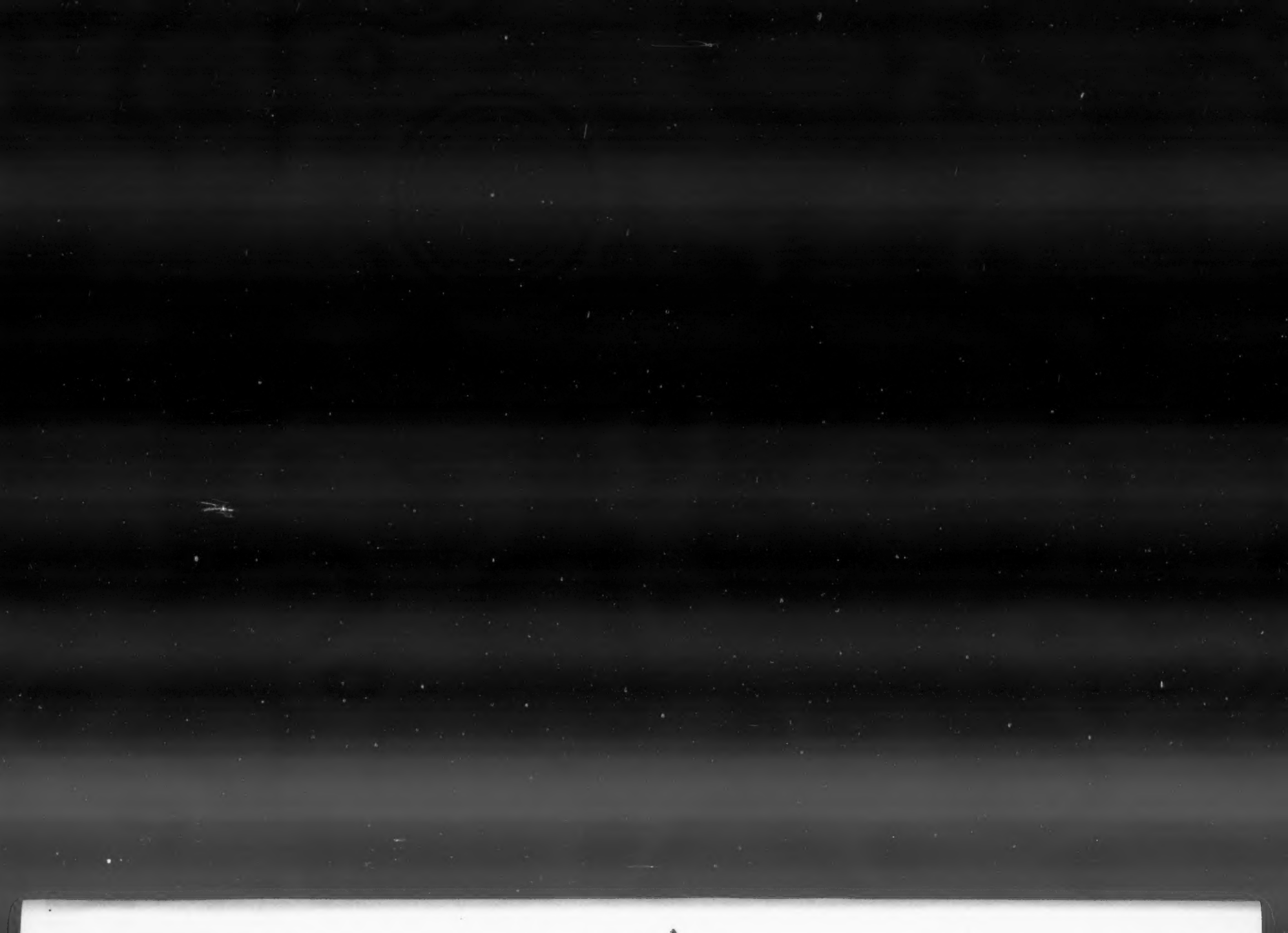
Development Completions by Fields

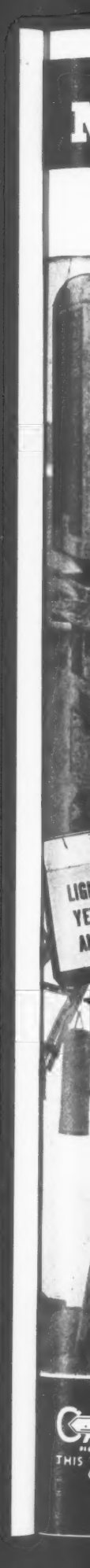
Field—	Comp.	Oil	Gas	Dry	Prod.
Anse La Butte	5	2	0	3	239
Avery Island	4	4	0	0	1,736
Barataria	4	4	0	0	1,444
Bastian Bay	4	3	0	1	611
Bateman Lake	5	1	3	1	25
Bayou Blue	6	4	0	2	558
Bayou Choctaw	4	1	0	3	349
Bayou Couba	6	1	0	5	67
Bayou des Glaise	2	2	0	0	665
Bayou Mallet	4	4	0	0	294
Bayou Penchant	3	1	0	2	133
Bayou Sale	14	14	0	0	3,164
Bay St. Elaine	3	3	0	0	678
Belle Isle	3	1	0	2	227
Black Bayou	2	2	0	0	291
Branch	2	2	0	0	196
Caillou Island	2	0	1	1	0
Cankton	2	2	0	0	307
Chacahoula Lake	9	4	1	4	504
Charenton	7	4	0	3	871
Delta Duck Club	5	5	0	0	782
Delta Farms	25	23	0	2	5,951
Dog Lake	2	1	0	1	138
East Hackberry	5	3	0	2	534
East Moss Lake	2	2	0	0	395
East White Lake	10	7	0	3	1,369
Edgerly	3	1	0	2	551
Egan	22	20	0	2	4,379
Erath	24	24	0	0	4,934
Fields	9	6	0	3	1,067
Flatwoods	2	0	0	2	0
Garden Island					
Bay	5	4	0	1	342
Good Hope	18	16	0	2	4,895
Golden Meadow	2	1	0	1	92
Grand Bay	3	3	0	0	673
Gueydan	4	3	0	1	620
Gum Cove	3	2	0	1	227
Hester (Convent)	2	1	0	1	144
Horseshoe					
Bayou	4	2	0	2	377
Indian Village	3	0	0	3	0
Jeanerette	2	0	1	1	0
Jefferson Island	3	1	0	2	191
Jennings	2	1	0	1	25
Krotz Springs	4	3	0	1	556
Lake Chicot	3	1	0	2	27
Lake Faussee					
Point	2	2	0	0	373
Lake Pelto	4	4	0	0	1,068
Lake Salvador	3	1	0	2	173
Lakeside	2	0	1	1	0
LaPice	8	6	0	2	1,656
LaPlace	4	2	0	2	458
Leeville	5	5	0	0	940
Napoleonville	7	4	1	2	1,189
Neale	13	13	0	0	2,568
North Cankton	5	2	0	3	225
North Crowley	6	5	0	1	569
N. Jeanerette	4	3	0	1	765
North Tepetate	11	11	0	0	1,609
Oretta	3	3	0	0	629
Pine Prairie	9	6	0	3	2,046
Porte Barre	5	4	0	1	397
Potash	4	3	1	0	698
Quarantine Bay	5	5	0	0	1,526
Reddell	3	3	0	0	400
Ritchie	10	9	0	1	834
Roanoke	6	4	0	2	554
St. Martinville	7	4	0	3	429
Section 28					
(Hager)	3	3	0	0	714
Shuteston	4	3	1	0	349
South Crowley	2	1	1	0	307
South Elton	2	1	0	1	32
South Roanoke	5	5	0	0	812
South Thornwell	2	1	0	1	120
Starks	5	1	1	3	32
Sulphur Mines	5	4	0	1	667
Thornwell	2	1	1	0	100
University	5	5	0	0	854
Vacherie	4	3	0	1	517
Venice	3	3	0	0	637
Ville Platte	3	3	0	0	530
Vinton	14	10	0	4	1,749
West Bay	3	2	0	1	282
West Gueydan	12	10	0	2	1,070
West Lake					
Verret	3	3	0	0	618
West Tepetate	22	20	0	2	10,310
West White					
Lake	3	1	0	2	92
White Castle	5	4	0	1	1,075
Miscellaneous	50	11	6	33	1,920
Wildcats	74	24	0	50	4,745
Total	615	407	19	189	87,266

SOUTH LOUISIANA

Wildcat Completions by Parishes

Parish—	Comp.	Oil	Gas	Dry	Footage
Acadia	7	2	0	5	71,826
Assumption	1	1	0	0	9,763
Avoyelles	1	0	0	1	8,049
Beauregard	5	2	0	3	47,358
Calcasieu	8	1	0	7	74,930
Cameron	10	1	0	9	101,319
E. Baton Rouge	2	1	0	1	15,701
Iberia	3	3	0	0	34,903
Iberville	3	2	0	1	31,800
Jefferson	3	2	0	1	33,568
Jefferson Davis	1	1	0	0	9,255
Lafayette	2	1	0	1	22,905
LaFourche	4	0	0	4	45,407
Livingston	1	0	0	1	9,240
Plaquemines	2	1	0	1	22,253
St. John	1	1	0	0	11,626
St. Landry	4	1	0	3	38,178
St. Martin	3	0	0	3	33,778
St. Mary	3	2	0	1	32,548
Tangipahoa	1	0	0	1	9,821
Terrebonne	6	2	0	4	72,717
Vermilion	3	0	0	3	35,507
Total	74	24	0	50	772,452





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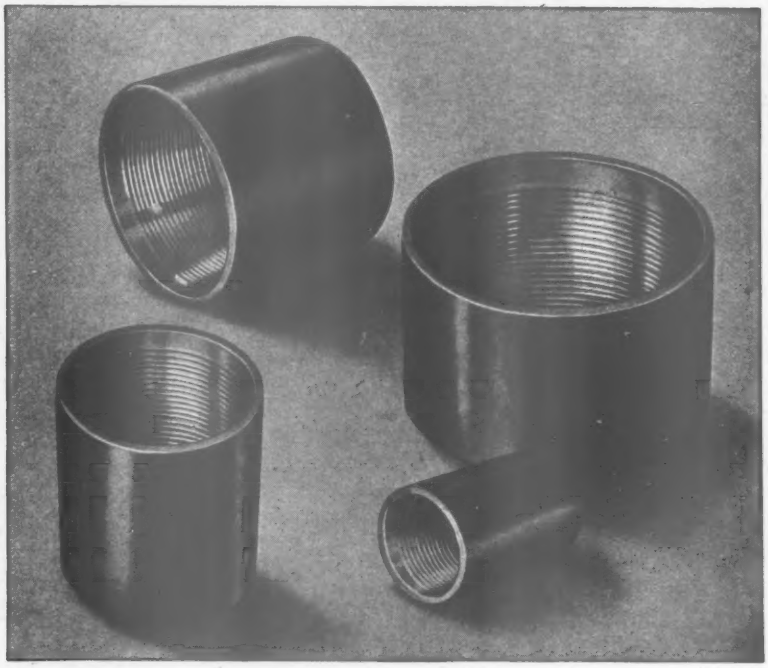

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HARRISBURG STEEL CORPORATION
HARRISBURG, PENNSYLVANIA

NORTH LOUISIANA
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	8	0	0	8	42,738
February	4	0	0	4	27,396
March	8	1	1	6	46,237
April	6	1	1	4	32,545
May	5	0	0	5	28,377
June	13	2	2	9	86,440
July	11	3	0	8	74,999
August	5	0	0	5	27,146
September	8	1	2	5	43,635
October	7	1	0	6	30,198
November	8	0	0	8	41,604
December	10	0	1	9	64,555
Total	93	9	7	77	545,870

NORTH LOUISIANA
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	15	6	5	4	53,150
February	15	11	4	0	87,908
March	21	13	4	4	110,150
April	21	8	4	9	69,508
May	15	7	3	5	56,188
June	43	24	9	10	180,483
July	26	14	6	6	97,484
August	25	15	4	6	76,643
September	66	40	14	12	277,436
October	34	15	12	7	140,070
November	57	38	7	12	246,170
December	62	39	10	13	175,614
Total	400	230	82	88	1,570,804

NORTH LOUISIANA
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	23	6	5	12	95,888
February	19	11	4	4	115,304
March	29	14	5	10	156,387
April	27	9	5	13	102,053
May	20	7	3	10	84,565
June	56	26	11	19	266,923
July	37	17	6	14	172,483
August	30	15	4	11	103,789
September	74	41	16	17	321,071
October	41	16	12	13	170,268
November	65	38	7	20	287,774
December	72	39	11	22	240,169
Total	493	239	89	165	2,116,674

Month—	Comp.	Oil	Gas	Dry	Footage

NORTH LOUISIANA
Wildcat Completions by Parishes

Parish—	Comp.	Oil	Gas	Dry	Footage
Avoyelles	1	0	0	1	8,059
Bienville	3	1	1	1	21,035
Bossier	1	0	0	1	6,026
Caddo	3	1	0	2	20,697
Caldwell	6	0	1	5	39,809
Catahoula	1	0	0	1	9,237
Claiborne	7	2	1	4	48,578
Concordia	2	1	1	0	19,470
De Soto	9	0	0	9	39,713
East Carroll	1	0	0	1	3,029
Franklin	3	0	1	2	15,687
Jackson	2	0	1	1	17,328
LaSalle	2	0	0	2	16,831
Lincoln	3	1	0	2	22,587
Madison	11	0	0	11	56,587
Natchitoches	8	0	0	8	26,245
Rapides	6	1	0	5	38,534
Red River	3	0	1	2	16,602
Richland	10	1	0	9	42,112
Sabine	3	0	0	3	15,568
Tensas	3	0	0	3	23,858
Webster	1	1	0	0	11,760
West Carroll	4	0	0	4	26,518
Total	93	9	7	77	545,870

NORTH LOUISIANA
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Bellevue	45	36	0	9	214
Big Creek	31	20	1	10	5,540
Caddo	33	18	1	14	365
Delhi	79	62	1	16	16,745
De Soto-Red River	26	10	3	13	1,749
Haynesville	5	5	0	0	1,611
Holly	15	11	0	4	1,570
Holly Ridge	23	16	6	1	3,297
Lake St. John	33	29	1	3	7,025
Lisbon	11	3	8	0	401
Logansport	4	0	4	0	0
Monroe	43	0	43	0	0

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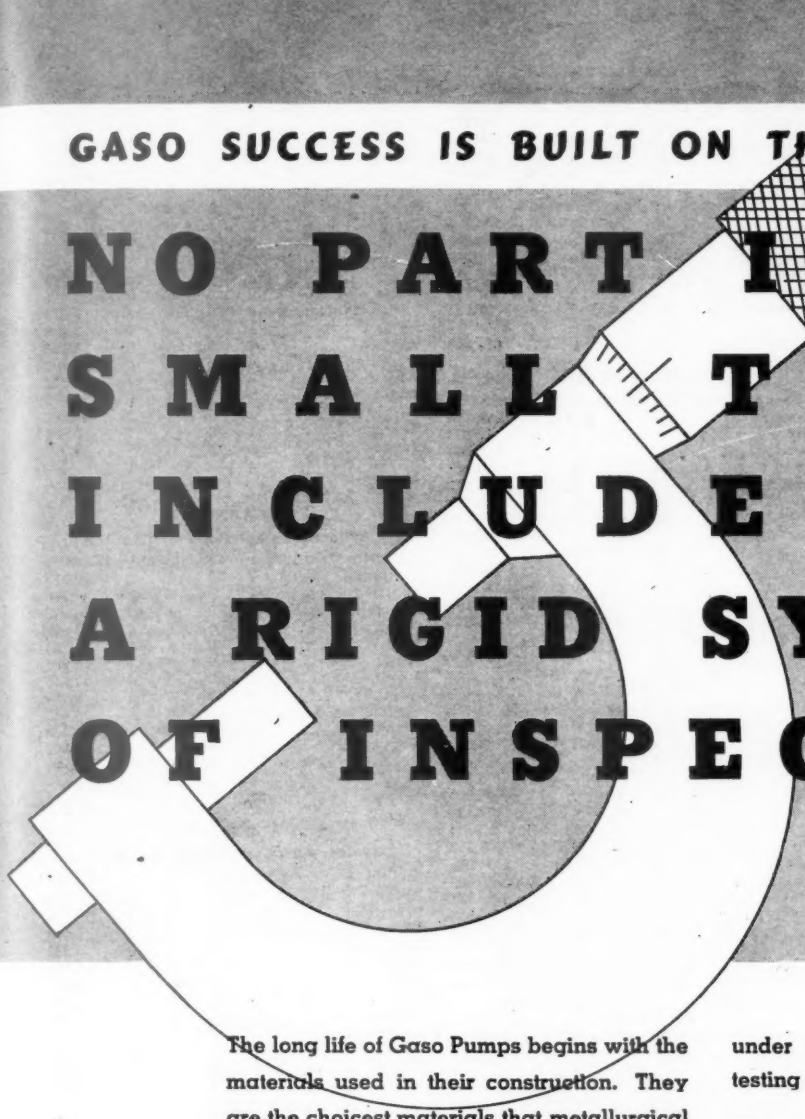

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Field—	Comp.	Oil	Gas	Dry	Prod.
Miscellaneous	52	20	14	18	3,171
Wildcats	93	9	7	77	1,514
Total	493	239	89	165	43,202

ARKANSAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	5	0	0	5	18,606
February	7	0	0	7	37,295
March	2	0	0	2	17,876
April	1	0	0	1	4,847
May	7	0	0	7	31,835
June	2	0	0	2	10,743
July	3	0	0	3	17,158
August	1	0	0	1	6,730
September	1	1	0	0	2,954
October	4	0	0	4	19,024
November	3	1	0	2	15,797
December	8	0	0	8	25,413
Total	44	2	0	42	208,188

ARKANSAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	9	7	0	2	49,968
February	4	2	0	2	13,486
March	8	6	0	2	44,671
April	11	9	0	2	54,997
May	13	12	0	1	49,688
June	15	14	0	1	56,810
July	15	12	0	3	60,142
August	14	11	0	3	54,918
September	13	12	0	1	66,039
October	13	9	0	4	62,159
November	8	6	0	2	34,660
December	18	13	0	5	72,560
Total	141	113	0	28	620,098

ARKANSAS

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	14	7	0	7	68,574
February	11	2	0	9	50,691
March	10	6	0	4	62,547
April	12	9	0	3	59,844
May	20	12	0	8	81,523
June	17	14	0	3	67,553
July	18	12	0	6	77,300
August	15	11	0	4	61,648
September	14	13	0	1	68,993
October	17	9	0	8	81,183
November	11	7	0	4	50,457
December	26	13	0	13	97,973
Total	185	115	0	70	828,286

ARKANSAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Atlanta	13	13	0	0	1,652
Calhoun	1	1	0	0	70
Dorcheat-Macedonia	5	3	0	2	244
Fouke	15	10	0	5	1,363
Haynesville Extension	5	4	0	1	3,108
Hillsboro	7	7	0	0	167
Irma-Troy	3	2	0	1	45
Patton	1	1	0	0	518
Rainbow City	4	3	0	1	80
Smackover	5	2	0	3	40
Stephens	60	53	0	7	4,495
Village	8	7	0	1	948
Miscellaneous	14	7	0	7	823
Wildcats	44	2	0	42	156
Total	185	115	0	70	13,709

ARKANSAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Ashley	1	0	0	1	5,515
Calhoun	3	0	0	3	9,916
Chicot	1	0	0	1	4,614
Cleveland	1	0	0	1	4,115
Columbia	4	0	0	4	22,857
Dallas	1	0	0	1	4,632
Desha	1	0	0	1	4,850
Drew	1	0	0	1	4,386
Lincoln	1	0	0	1	4,772
Miller	5	0	0	5	34,430
Nevada	1	0	0	1	4,795
Ouachita	6	1	0	5	20,853
Pope	1	0	0	1	4,847
Union	14	1	0	13	67,843
Washington	2	0	0	2	3,366
White	1	0	0	1	6,397
Total	44	2	0	42	208,188

MISSISSIPPI

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	10	1	0	9	72,110
February	9	0	0	9	70,278
March	13	2	0	11	95,713
April	13	0	0	13	82,604
May	4	0	0	4	32,419
June	15	0	0	15	107,362
July	6	0	0	6	46,229
August	15	2	0	13	100,823
September	14	0	0	14	97,465
October	8	0	0	8	60,238
November	12	1	0	11	82,717
December	5	0	0	5	32,582
Total	124	6	0	118	880,540

MISSISSIPPI

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	19	16	0	3	113,892
February	17	14	0	3	115,964
March	16	14	0	2	84,016
April	20	15	0	5	116,201
May	23	16	0	7	139,717
June	25	18	0	7	176,144
July	21	16	0	5	148,734
August	15	13	0	2	94,098
September	27	24	0	3	186,174
October	21	15	0	6	128,500
November	17	15	0	2	113,169
December	17	16	0	1	105,857
Total	238	192	0	46	1,522,466

MISSISSIPPI

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	29	17	0	12	186,002
February	26	14	0	12	186,242
March	29	16	0	13	179,729
April	33	15	0	18	198,805
May	27	10	0	11	172,136
June	40	18	0	22	283,506
July	27	16	0	11	194,963
August	30	15	0	15	194,921
September	41	24	0	17	283,639
October	29	15	0	14	188,738
November	29	16	0	13	195,886
December	22	16	0	6	138,439
Total	362	198	0	164	2,403,006

MISSISSIPPI

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Baxterville	13	11	0	2	3,776
Cranfield	36	31	0	5	7,755
Eucutta	68	58	0	10	8,306
Gwinville	9	9	0	0	1,527
Heidelberg, East	42	35	0	7	4,783
Heidelberg, West	25	17	0	8	2,212
Langsdale	19	16	0	3	1,624
Mallalieu	6	1	0	5	288
Pickens	5	3	0	2	526
Tinsley	5	5	0	0	967
Miscellaneous	10	6	0	4	817
Wildcats	124	6	0	118	620
Total	362	198	0	164	33,201

MISSISSIPPI

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Adams	3	0	0	3	30,224
Attala	1	0	0	1	6,217
Bolivar	1	0	0	1	5,114
Claiborne	3	0	0	3	23,588
Clarke	5	2	0	3	22,248
Copiah	2	0	0	2	20,968
Covington	3	0	0	3	28,670
DeSoto	1	0	0	1	4,884
Forrest	1	0	0	1	9,748
Greene	3	0	0	3	24,239
Hinds	3	0	0	3	23,115
Holmes	2	0	0	2	12,615
Issaquena	2	0	0	2	16,109
Itawamba	1	0	0	1	1,511
Jasper	4	1	0	3	29,951
Jeff Davis	3	0	0	3	27,556
Jefferson	3	1	0	2	30,086
Jones	8	0	0	8	68,058
Lamar	1	0	0	1	11,393
Lauderdale	3	0	0	3	9,046
Lawrence	1	0	0	1	7,625
Leake	1	0	0	1	4,816
LeFlore	2	0	0	2	10,055
Madison	5	0	0	5	30,358
Marion	4	1	0	3	33,294
Montgomery	1	0	0	1	4,012
Neshoba	1	0	0	1	4,010
Newton	1	0	0	1	8,338
Pearl River	2	0	0	2	18,654
Perry	1	0	0	1	8,873
Rankin	8	1	0	7	44,316
Scott	3	0	0	3	21,353
Simpson	2	0	0	2	19,423
Smith	5	0	0	5	33,042
Stone	2	0	0	2	17,611
Tallahatchie	2	0	0	2	8,375
Tate	1	0	0	1	3,165
Warren	7	0	0	7	58,408
Washington	4	0	0	4	20,796
Wayne	4	0	0	4	33,512
Webster	2	0	0	2	6,455
Wilkinson	2	0	0	2	16,887
Yalobusha	1	0	0	1	2,930
Yazoo	9	0	0	9	58,982
Total	124	6	0	118	880,540

ALABAMA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	10,315
February	1	0	0	1	4,310
March	0	0	0	0	0
April	1	0	1	0	2,005
May	1	0	0	1	1,725
June	1	0	0	1	4,230
July	4	0	0	4	17,915
August	1	0	0	1	3,450
September	5	1	0	4	18,458
October	2	0	0	2	13,502
November	2	0	0	2	12,099
December	2	0	0	2	14,306
Total	22	1	1	20	102,225

ALABAMA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	0	0	0	0	0
February	0	0	0	0	0
March	1	0	0	1	3,690
April	2	2	0	0	5,338
May	3	2	0	1	10,932
June	1	1	0	0	3,624
July	2	2	0	0	7,063
August	1	1	0	0	3,568
September	0	0	0	0	0
October	1	1	0	0	3,327
November	3	2	0	1	9,842
December	1	1	0	0	3,340
Total	15	12	0	3	50,724

ALABAMA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	0	2	10,315
February	1	0	0	1	4,310
March	1	0	0	1	3,690
April	3	2	1	0	7,343
May	4	2	0	2	12,657
June	2	1	0	1	7,854
July	6	2	0	4	24,978
August	2	1	0	1	7,018
September	5	1	0	4	18,458
October	3	1	0	2	16,829
November	5	2	0	3	21,851
December	3	1	0	2	17,646
Total	37	13	1	23	152,949

ALABAMA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Bullock	1	0	0	1	1,725
Choctaw	2	1	0	1	7,771
Clarke	6	0	0	6	31,582
Conecuh	1	0	0	1	2,845
Marengo	1	0	0	1	4,230
Mobile	2	0	0	2	14,530
Sumter	1	0	0	1	2,616
Walker	1	0	0	1	3,450
Washington	3	0	0	3	13,144
Wilcox	3	0	0	3	18,327
Winston	1	0	1	0	2,005
Total	22	1	1	20	102,225

GEORGIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	0	0	0	0	0
February	1	0	0	1	4,298
March	0	0	0	0	0
April	1	0	0	1	4,066
May	0	0	0	0	0
June	1	0	0	1	345
July	2	0	0	2	6,229
August	0	0	0	0	0
September	0	0	0	0	0
October	0	0	0	0	0
November	0	0	0	0	0
December	0	0	0	0	0
Total	5	0	0	5	14,938

FLORIDA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	0	0	0	0	0
February	0	0	0	0	0
March	3	0	0	3	25,641
April	0	0	0	0	0
May	4	0	0	4	18,808
June	2	1	0	1	17,393
July	1	0	0	1	3,580
August	1	0	0	1	3,460
September	1	0	0	1	5,096
October	1	0	0	1	11,842
November	1	0	0	1	4,457
December	1	0	0	1	3,040
Total	15	1	0	14	93,317

OKLAHOMA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	38	7	2	29	170,669
February	29	12	2	15	137,203
March	35	6	0	29	174,764
April	29	3	1	25	126,806
May	54	12	2	40	222,746
June	51	7	2	42	223,199
July	35	5	3	27	152,368
August	47	7	3	37	206,757
September	48	11	1	36	209,356
October	24	5	0	19	112,278
November	36	1	4	31	153,805
December	45	10	0	35	178,941
Total	471	86	20	365	2,068,892

OKLAHOMA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	170	128	13	29	743,870
February	164	118	12	34	694,477
March	172	116	13	43	762,751
April	147	90	21	36	627,360
May	167	99	26	42	659,143
June	216	144	24	48	836,007
July	150	101	13	36	542,460
August	130	83	13	34	524,432
September	222	138	27	57	808,573
October	120	69	12	39	409,597
November	194	127	29	38	708,926
December	198	127	27	44	661,160
Total	2,050	1,340	230	480	7,978,756

OKLAHOMA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	208	135	15	58	914,539
February	193	130	14	49	831,680
March	207	122	13	72	937,515
April	176	93	22	61	754,166
May	221	111	28	82	881,889
June	267	151	26	90	1,059,206
July	185	106	16	63	694,828
August	177	90	16	71	731,189
September	270	149	28	93	1,017,929
October	144	74	12	58	521,875
November	230	128	33	69	862,731
December	243	137	27	79	840,101
Total	2,521	1,426	250	*845	10,047,648

*Includes 12 service wells.

OKLAHOMA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Ada	10	6	3	1	205
Apache	8	4	1	3	89
Big Pond	28	21	0	7	1,096
Buell	5	3	0	2	73
Cement	51	37	6	8	7,534
Cheyarha	39	36	0	3	5,110
Crescent	23	16	0	7	3,083
Cumberland	25	24	0	1	21,717
Cushing	25	19	0	6	432
Duncan, West	12	6	3	3	644
Ed Cox	33	24	2	7	1,296
Edmond, West	403	390	1	12	298,534
Fort Sill Reservation	5	3	1	1	15
Garber	7	3	0	4	94
Glenn	21	11	2	8	87
Healdton	21	13	0	8	645
Hobart, N. E.	12	5	0	7	570
Hoover, N. W.	14	8	0	6	550
Horn's Corner	8	1	2	5	37
Hugoton	110	0	110	0	0
Jordan	11	5	0	6	1,175
Kellyville Dist.	7	1	0	6	75
Loco	26	18	2	6	235
Loco, West	21	18	0	3	225
Lone Grove, Southwest	30	27	0	3	5,345
Moore, South	11	11	0	0	6,186
Moore, West	10	10	0	0	5,851
Pauls Valley	8	6	0	2	1,618
Pauls Valley, E.	63	53	3	7	5,560
Spaulding, S. and S. E.	40	37	0	3	2,551
Stroud	26	25	0	1	2,676
Stroud, S. E.	15	12	0	3	746
Velma & North	57	45	4	8	5,035
Wewoka Dist.	36	22	0	14	1,412
Carter County, Misc.	25	18	1	6	1,921
Creek County, Misc.	51	33	1	17	1,139
Hughes County, Misc.	29	9	10	10	706
Lincoln County, Misc.	52	42	5	5	6,004
Logan County, Misc.	52	30	2	20	7,967
Okfuskee County,					

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Field—	Comp.	Oil	Gas	Dry	Prod.
Misc.	48	15	8	25	1,068
Okmulgee County, Misc.	53	17	17	19	271
Osage County, Misc.	92	58	1	33	2,852
Payne County, Misc.	45	24	2	19	1,342
Seminole County, Misc.	103	62	5	36	8,141
Miscellaneous	279	112	38	129	12,828
Wildcats	471	86	20	365	18,381
Total	2,521	1,426	250	845	443,141

OKLAHOMA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Alfalfa	2	0	0	2	11,738
Atoka	1	0	0	1	2,780
Beaver	1	0	0	1	3,521
Beckham	6	0	1	5	32,006
Blaine	2	0	0	2	13,217
Bryan	7	2	0	5	30,377
Caddo	5	1	0	4	21,111
Canadian	5	1	0	4	43,271
Carter	8	1	0	7	27,551
Cimarron	3	1	1	1	15,689
Cleveland	11	2	0	9	82,318
Coal	2	0	0	2	6,448
Comanche	7	0	0	7	23,005
Cotton	11	0	0	11	26,343
Creek	17	4	0	13	54,918
Ellis	2	0	0	2	13,168
Garfield	13	4	0	9	73,528
Garvin	32	5	1	26	111,878
Grady	5	1	0	4	41,478
Grant	3	0	0	3	16,448
Greer	3	1	0	2	2,997
Hughes	15	1	3	11	62,378
Jackson	1	1	0	0	2,976
Jefferson	3	0	0	3	7,556
Johnson	1	0	0	1	1,854
Kay	8	1	0	7	27,515
Kingfisher	7	4	0	3	52,420
Kiowa	5	2	0	3	5,793
Latimer	1	0	0	1	5,893
Lincoln	20	3	0	17	89,655
Logan	27	7	0	20	155,905
Love	6	0	0	6	39,901
McClain	5	1	0	4	47,609
McIntosh	5	0	1	4	13,121
Major	1	0	0	1	9,345
Marshall	4	1	0	3	12,692
Murray	2	0	0	2	3,142
Muskogee	1	0	1	0	1,130
Noble	16	2	0	14	76,159
Okfuskee	21	3	2	16	75,697
Oklahoma	23	10	0	13	157,872
Okmulgee	3	0	0	3	9,434
Osage	14	4	0	10	38,466
Pawnee	12	3	0	9	42,610
Payne	13	4	0	9	55,719
Pittsburg	7	0	4	3	15,166
Pontotoc	12	2	0	10	28,021
Pottawatomie	17	2	2	13	79,594
Seminole	28	3	1	24	101,668
Sequoyah	1	0	0	1	2,158
Stephens	34	7	1	26	126,492
Texas	2	0	2	0	6,080
Tillman	6	2	0	4	28,379
Washita	4	0	0	4	32,702
Total	471	86	20	365	2,068,892

AS A STEEL VAULT
SHUTS OUT THIEVES...
EAGLE LEAD WOOL
shuts out bottom water!
You don't take chances on a costly bottom water shut-down when you keep Eagle Lead Wool handy. Tamped into place in the well, this finely stranded metallic wool makes a permanent, durable, non-corroding seal that saves you time, oil and money. Eagle Lead Wool comes in convenient 50 pound sacks—is easy to place in special cartridge-shaped Eagle Wire Containers sized to fit all casings.
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These 3 Eagle Bearing Metals meet most requirements . . .
Eagle Dreadnaught—for extreme speed and pressure conditions.
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EAGLE PICHER
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Seals off bottom water —keeps 'em flowing!
THE EAGLE-PICHER COMPANY
Chicago • Joplin • Cincinnati • Dallas • Kansas City

KANSAS

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	38	1	2	35	132,207
February	31	4	1	26	113,210
March	23	4	1	18	97,443
April	26	3	2	21	87,714
May	36	5	2	29	138,299
June	48	2	1	45	175,036
July	25	3	0	22	97,989
August	34	0	2	32	119,915
September	34	6	1	27	116,594
October	29	3	0	26	103,765
November	33	2	2	29	118,881
December	28	3	2	23	99,073
Total	385	36	16	333	1,400,126

KANSAS

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	63	37	9	17	205,708
February	78	44	5	29	253,871
March	127	62	13	52	413,899
April	95	54	10	31	315,058
May	99	66	13	20	307,599
June	142	86	6	50	441,455
July	121	72	15	34	368,405
August	101	56	10	35	320,475
September	165	96	23	46	402,821
October	110	55	26	29	345,825
November	120	66	24	30	381,554
December	190	108	31	51	620,505
Total	1,411	802	185	424	4,477,175

KANSAS

Total Completions by Months

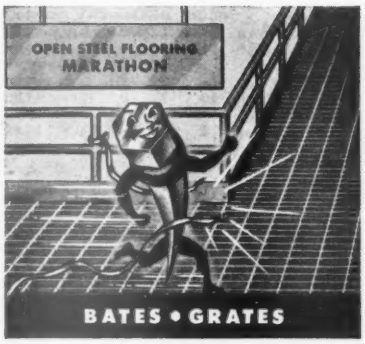
Month—	Comp.	Oil	Gas	Dry	Footage
January	101	38	11	52	337,915
February	109	48	6	55	367,081
March	150	66	14	70	511,342
April	121	57	12	52	402,772
May	135	71	15	49	445,898
June	190	88	7	95	616,491
July	146	75	15	56	466,394
August	135	56	12	67	440,390
September	199	102	24	73	619,415
October	139	58	26	55	449,590
November	153	68	26	59	500,435
December	218	111	33	74	719,578
Total	1,796	838	201	*757	5,877,301

*Includes 12 service wells.

KANSAS

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Adell	13	12	0	1	8,436
Albert	7	6	0	1	929
Aldrich	7	5	0	2	1,133
Atherton & N.	6	2	0	4	282
Barry	6	4	0	2	4,463
Bemis-Shutts	9	6	0	3	4,927
Big Creek	12	5	0	7	761
Boyd	15	12	0	3	6,271



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WINS
~~IN~~ *on* A WALKWAY

• When it comes to running a walkway, Mr. Fillet Weld is a winner every time. That's what makes BATES • GRATES the right choice for walkways in your plant.

These championship qualities go into

BATES • GRATES

• **Longer lasting**—the Fillet Weld and Hex Bar Construction makes BATES • GRATES more durable. Their strength exceeds all former standards set for open steel flooring and stair treads.

• **Safer**—the combination of Hex Bars and Fillet Welding provides clean, crisp, SAFE grating.

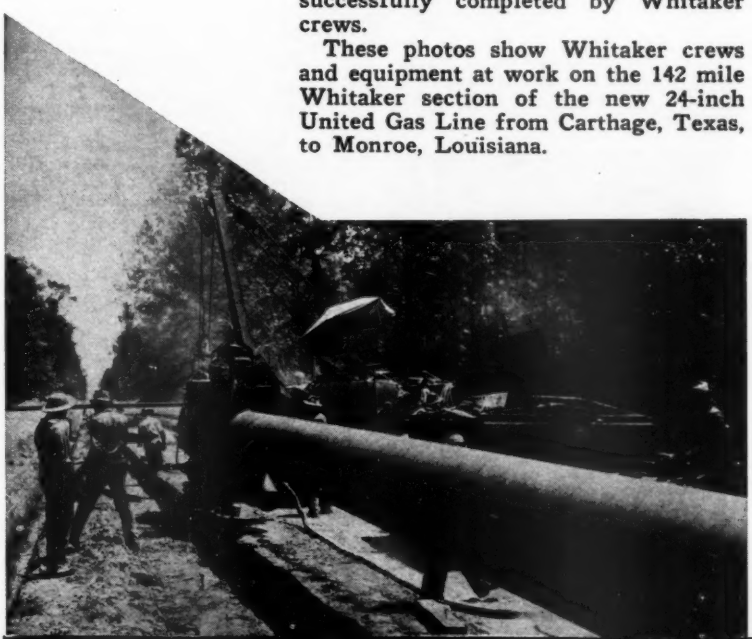
• **Better ventilation and light**—the reflecting bevels of the Hex Bars, with 90° corners, allow maximum transmission of light and air.

for open steel flooring, stair treads, floor armor and bridge decking . . . Get a Bid from Bates

OVER 26 YEARS OF PIPE LINE EXPERIENCE

Pipe line "know how" seasoned by more than 26 years of continuous experience has paid off on many a tough job successfully completed by Whitaker crews.

These photos show Whitaker crews and equipment at work on the 142 mile Whitaker section of the new 24-inch United Gas Line from Carthage, Texas, to Monroe, Louisiana.



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ENGINEERING & PIPE LINE CONTRACTORS

New Construction · Reconditioning · Taking Up Old Lines

General Offices
Dan Waggoner Bldg., FORT WORTH, TEXAS
Offices & Warehouse: 3300 Navigation Blvd., Houston, Texas

Field—	Comp.	Oil	Gas	Dry	Prod.
Brandt-Sensenbaugh	7	4	0	3	630
Canton, North	4	2	0	2	55
Carmi	5	4	0	1	863
Catherine, NW	5	3	0	2	327
Chase	21	14	0	7	1,752
Chitwood	29	23	5	1	27,284
El Dorado	42	27	0	15	1,584
Ferrell	13	12	0	1	303
Geneseo	5	1	0	4	265
Hall-Gurney	20	14	0	6	2,052
Hugoton	164	0	163	1	0
Jenday	22	19	0	3	5,624
Jenday, South	10	8	0	2	2,439
Kraft-Prusa	95	67	0	28	48,003
Lindsborg	5	2	0	3	554
Livengood	4	2	0	2	125
Lost Springs & North	30	16	0	14	908
Merten	10	7	0	3	884
Pawnee Rock	3	3	0	0	243
Pleasant	17	13	0	4	3,731
Pritchard	8	4	0	4	4,351
Rahn	12	10	0	2	2,815
Ritz-Canton	9	2	3	4	150
Riverview	3	3	0	0	3,003
Ryan	22	20	0	2	25,848
Shriver	5	4	0	1	3,818
Silica	17	10	0	7	1,953
Skinner, NW	7	2	2	3	271
Stoltenberg	22	16	0	6	2,313
Toulon	3	2	0	1	61
Trapp	64	48	0	16	27,010
Virgil & North Zenith-Peace Creek	53	45	0	8	1,065
Wildcats	19	14	0	5	5,701
Miscellaneous	581	329	12	240	93,493
Wildcats	395	36	16	333	14,221
Total	1,796	838	201	757	311,901

KANSAS

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Barber	18	0	5	13	83,776
Barton	40	4	1	35	140,864
Brown	1	1	0	0	2,590
Butler	24	1	0	23	69,361
Clark	1	0	0	1	6,817
Comanche	1	0	0	1	6,000
Cowley	13	2	0	11	42,302
Decatur	3	0	0	3	12,132
Dickinson	5	1	0	4	14,021
Doniphan	1	0	0	1	2,007
Douglas	3	0	1	2	6,169
Edwards	4	0	0	4	20,132
Ellis	23	4	0	19	83,627
Ellsworth	3	0	0	3	10,645
Finney	3	0	1	2	12,736
Ford	1	0	0	1	6,152
Gove	1	0	0	1	4,762
Graham	12	2	0	10	46,643
Gray	1	0	0	1	5,550
Greenwood	6	0	0	6	13,687
Harper	2	0	0	2	10,572
Harvey	1	0	0	1	3,802
Haskell	1	0	0	1	2,922
Hodgeman	1	0	0	1	5,126
Jackson	1	0	0	1	3,068
Jefferson	1	0	0	1	2,149
Johnson	1	0	0	1	3,537
Kearney	1	0	1	0	3,033
Kingman	6	0	0	6	27,819
Kiowa	1	0	0	1	5,440
Lane	2	0	0	2	10,047
Leavenworth	4	0	1	3	5,219
McPherson	12	1	0	11	36,800
Marion	12	0	0	12	32,651
Meade	1	0	1	0	7,921
Miami	2	0	0	2	3,357
Morton	1	0	0	1	2,617
Ness	2	1	0	1	9,253
Norton	4	1	0	3	14,875
Pawnee	12	1	1	10	50,601
Phillips	6	0	0	6	21,349
Pratt	7	0	0	7	33,599
Reno	9	0	0	9	37,259
Rice	10	0	0	10	34,596
Riley	1	0	0	1	2,727
Rooks	13	2	0	11	46,994
Rush	7	1	1	5	25,241
Russell	18	3	0	15	59,751
Saline	8	2	0	6	27,003
Sedgwick	16	3	0	13	56,118
Seward	1	0	0	1	2,890
Sherman	1	0	0	1	5,540
Sheridan	3	1	0	2	12,917
Stafford	23	2	0	21	89,078
Stanton	3	0	3	0	7,957
Sumner	15	2	0	13	60,023
Thomas	2	0	0	2	10,598
Trego	6	1	0	5	25,281
Wallace	1	0	0	1	5,541
Woodson	3	0	0	3	4,891
Total	385	36	16	333	1,400,126

NEBRASKA

Total Completions by Months

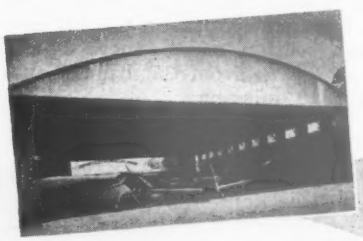
Month—	Comp.	Oil	Gas	Dry	Footage
January	4	0	0	4	19,838
February	0	0	0	0	0
March	1	0	0	1	2,762
April	0	0	0	0	0
May	0	0	0	0	0
June	1	0	0	1	4,494
July	0	0	0	0	0
August	1	0	0	1	2,319
September	2	0	0	2	7,022
October	0	0	0	0	0
November	3	0	0	3	7,826
December	1	0	0	1	2,538
Total	13	0	0	13	46,799

MISSOURI-IOWA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	2	0	1	1	1,785
February	2	0	0	2	1,071
March	2	1	0	1	2,255
April	1	0	0	1	965
May	0	0	0	0	0
June	1	0	1	0	545
July	0	0	0	0	0
August	1	0	1	0	500
September	3	0	0	3	3,773
October	1	0	0	1	4,580
November	6	0	1	5	6,431
December	0	0	0	0	0
Total	19	1	4	14	21,887

Performance

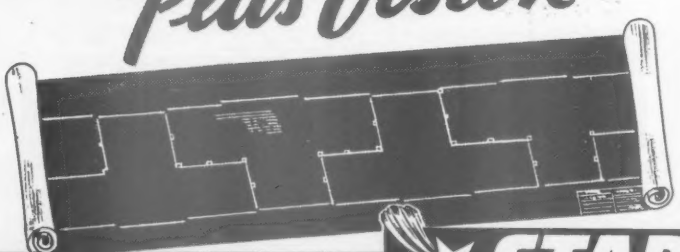


Star sectional steel hangars are economical because they are Prefabricated, enduring because they are Steel, satisfactory because overhead clear span steel work provides maximum storage space.

Star's record of performance on military and civilian installations under restrictions is conclusive proof of the service you may expect now that priorities have been lifted.

Looking to the future and the needs of private fliers, Star submits the Prefabricated sectional steel multi-hangar. This new type hangar provides individual and limitless storage with maximum space conservation for small airports. These hangars are outstanding for safe and economical construction, complete privacy and perfect accessibility. Information available upon request.

Plus Vision



PREFABRICATED STEEL HANGARS

★STAR MANUFACTURING CO.

3012 SOUTH STILES OKLAHOMA CITY, OKLA.

ILLINOIS
Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	33	4	0	29	83,329
February	21	6	0	15	63,019
March	24	6	0	18	68,903
April	26	1	0	25	73,631
May	39	8	0	31	99,011
June	47	5	0	42	129,754
July	56	7	0	49	135,180
August	38	4	0	34	102,252
September	62	10	0	52	167,845
October	30	6	0	24	73,482
November	52	9	0	43	123,248
December	22	0	0	22	52,242
Total	450	66	0	384	1,171,896

ILLINOIS
Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	122	90	0	32	321,845
February	85	66	0	19	227,800
March	63	41	0	22	166,514
April	90	68	0	22	237,842
May	93	74	0	19	267,586
June	98	84	1	13	263,859
July	142	98	0	44	385,217
August	126	99	0	27	331,353
September	145	119	0	26	380,280
October	100	77	0	23	214,281
November	116	90	0	26	300,789
December	119	88	0	31	296,220
Total	1,299	994	1	304	3,393,586

ILLINOIS
Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	155	94	0	61	405,174
February	106	72	0	34	290,819
March	87	47	0	40	235,417
April	116	69	0	47	311,473
May	132	82	0	50	366,597
June	145	89	1	55	393,613
July	198	105	0	93	520,397
August	164	103	0	61	433,605
September	207	129	0	78	548,125
October	130	83	0	47	287,763
November	168	99	0	69	424,037
December	141	88	0	53	348,462
Total	1,749	1,060	1	688	4,565,482

ILLINOIS
Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Bond	3	0	0	3	2,718
Clay	24	6	0	18	72,192
Clinton	15	2	0	13	22,404
Coles	28	5	0	23	58,062
Edgar	3	0	0	3	2,279
Edwards	18	7	0	11	54,996
Effingham	17	3	0	14	45,049
Fayette	9	0	0	9	18,227
Franklin	9	0	0	9	26,683
Gallatin	9	1	0	8	25,981
Hamilton	17	5	0	12	55,863
Jasper	21	4	0	17	59,696
Jefferson	44	4	0	40	118,840
Lawrence	11	0	0	11	20,219
Madison	15	2	0	13	29,221
Marion	26	1	0	25	57,809
Perry	5	0	0	5	6,729
Richland	26	6	0	20	82,145
St. Clair	3	0	0	3	6,859
Saline	3	0	0	3	9,091
Shelby	4	0	0	4	6,497
Wabash	13	0	0	13	32,132
Washington	19	0	0	19	34,120
Wayne	52	12	0	40	169,086
White	40	8	0	32	125,645
Miscellaneous	16	0	0	16	29,353
Total	450	66	0	384	1,171,896

ILLINOIS
Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Albion Consol.	65	53	0	12	5,049
Albion East	7	2	0	5	466
Allendale	22	9	0	13	856
Bennington	38	34	0	4	8,698
Bible Grove	75	53	0	22	7,370
Boos North	8	7	0	1	2,905
Boyd	80	75	0	5	11,516
Brownsville	29	26	0	3	3,806
Bungay	8	6	0	2	557
Burnt Prairie	7	6	0	1	365
Calhoun	26	22	0	4	9,431
Calvin North	17	13	0	4	600
Clay City	139	110	0	29	18,217
Colmar-Plymouth	7	4	0	3	21
Concord	16	14	0	2	2,770
Cowling	18	12	0	6	1,277
Divide West	32	28	0	4	9,349
Ewing	8	5	0	3	480
Griffin-New Harmony	39	35	0	4	2,501
Herald	29	18	0	11	1,888
Iola	8	8	0	0	463
Irvington	6	5	0	1	146
Johnsonville	21	15	0	6	2,819
Kenner	22	16	0	6	540
Lancaster	31	24	0	7	1,982
Lawrence	6	2	0	4	101
Marine	27	24	0	3	2,942
Mason South	13	11	0	2	708
Mattoon	65	54	1	10	9,618
Mt. Carmel	31	27	0	4	2,367
New Haven West	12	7	0	5	636
Noble	55	40	0	15	6,943
Odin	30	21	0	9	2,024
Olney East	23	19	0	4	3,587
Parkersburg	17	15	0	2	2,007
Patoka	10	9	0	1	94
Patton, West	7	5	0	2	324
Phillipstown	37	28	0	9	2,390
Roaches North	7	5	0	2	203
Roland	17	11	0	6	1,132
Rural Hill	6	3	0	3	246
Sailor Springs	9	5	0	4	290
St. Jacob	6	5	0	1	246
Seminary	5	1	0	4	226
Sims North	5	3	0	2	1,915
Stanford	11	8	0	3	1,903
Thackeray	45	34	0	11	3,845

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GATKE
BRAKE BLOCKS

- *Stand the Heat and Hold*
- *Feed off smoothly at all depths*
- *Pick up with positive, non-grabbing action*
- *Prolong flange life*
- *Wear incredibly long*

The *Extra Performance Qualities* of GATKE Brake Lining afford *easier* handling and *faster* operation with *reduced strain* on men and equipment. Rig Manufacturers *use it predominantly* as original equipment and for replacement.

Avoid substitutes. Your Rig Manufacturers have GATKE Brake Lining that's engineered for the job.

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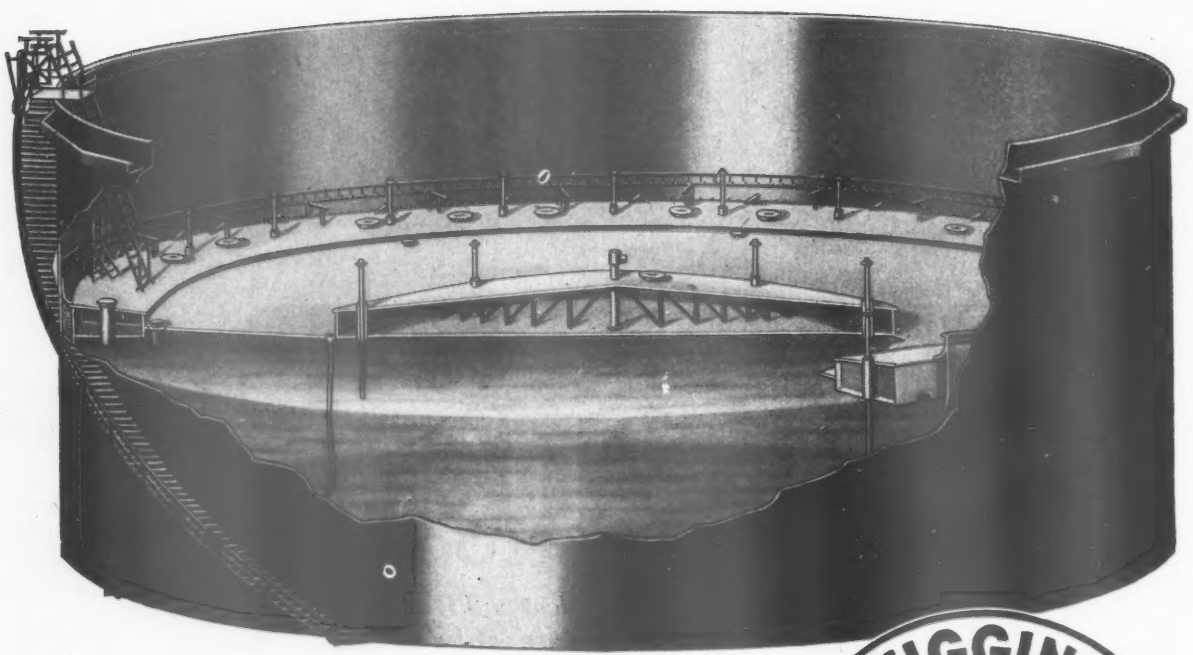
Now...a brand new

The LO-DEK



The Wiggins Lo-Dek is designed specifically to handle sour crudes. The corrosion problem attendant upon the storage of sour crudes is removed by the Lo-Dek design which permits a minimum area of the steel to contact the vapors. Undissolved vapors are led to the annular space between the tank shell and pontoon through vapor channels built in the pontoons. These vapors are held captive by the exclusive Wiggins-designed seal, which, through its effectiveness, reduces the volumetric and gravity losses caused by evaporation.

WIGGINS VAPOR SEALS

GATX GENERAL AMERICAN

Field—	Comp.	Oil	Gas	Dry	Prod.
Thompsonville North	5	3	0	2	289
Trumbull	6	4	0	2	299
Walpole	5	4	0	1	414
Willow Hill	13	6	0	7	1,434
Miscellaneous	68	40	0	28	5,041
Wildcats	450	66	0	384	7,807
Total	1,749	1,060	1	688	153,103

INDIANA

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	9	1	0	8	14,029
February	13	0	0	13	29,071
March	6	0	1	5	10,542
April	4	0	0	4	8,913
May	8	2	0	6	14,232
June	13	1	1	11	22,200
July	17	3	0	14	34,017
August	10	0	0	10	18,478
September	0	0	0	0	0
October	6	0	1	5	11,199
November	6	0	1	5	7,597
December	2	0	0	2	2,466
Total	94	7	4	83	172,744

INDIANA

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	12	7	0	5	21,994
February	14	6	3	5	23,766
March	9	3	1	5	9,984
April	20	9	0	11	27,889
May	21	12	1	8	31,156
June	16	8	3	5	22,304
July	25	7	6	12	38,774
August	18	10	3	5	27,613
September	23	9	3	11	35,210
October	27	13	2	12	42,256
November	13	10	2	1	18,666
December	13	10	0	3	27,264
Total	211	104	24	83	326,876

INDIANA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	21	8	0	13	36,023
February	27	6	3	18	52,837
March	15	3	2	10	20,526
April	24	9	0	15	36,802
May	29	14	1	14	45,388
June	29	9	4	16	44,504
July	42	10	6	26	72,791
August	28	10	3	15	46,091
September	23	9	3	11	35,210
October	33	13	3	17	53,455
November	19	10	3	6	26,263
December	15	10	0	5	29,730
Total	305	111	28	166	499,620

INDIANA

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Bufkin	7	1	0	6	15
Caborn	4	1	0	3	11
Cannelburg	11	6	0	5	111
Enterprise	5	5	0	0	27
Farmersville	3	3	0	0	70
Greensburg	3	0	3	0	0
Griffin	18	12	0	6	1,203
Henderson	4	3	0	1	40
Heusler	11	7	0	4	476
Horton	4	4	0	0	114
Iva West	3	0	2	1	0
Jeffries	3	3	0	0	132
Johnson	2	1	0	1	195
Kirksville	8	3	0	5	241
Laconia	3	0	2	1	0
Lysle	3	2	0	1	234
Mt. Carmel East	2	2	0	0	304
Mt. Vernon	4	3	0	1	479
New Harmony	5	5	0	0	1,165
Owensville North	4	3	0	1	416
Rockport	3	0	0	3	0
Rush	5	0	5	0	0
St. Francesville East	2	2	0	0	270
St. Thomas	6	2	0	4	171
Sullivan	5	0	1	4	0
Trenton	28	13	9	6	103
Union-Bowman	9	6	0	3	101
Upton	2	2	0	0	75
Welborn	2	1	0	1	45
Wheeling	18	11	0	7	808
Miscellaneous	24	43	2	19	215
Total	211	104	24	83	7,021

INDIANA

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Daviess	4	0	0	4	3,566
Dubois	6	0	0	6	5,208
Fountain	2	0	0	2	3,260
Gibson	12	0	0	12	28,921
Grant	2	0	0	2	2,029
Henry	1	0	0	1	3,664
Jackson	2	0	0	2	2,556
Jasper	1	0	0	1	103
Jay	1	0	1	0	1,137
Knox	5	3	0	2	10,085
Lake	2	0	0	2	3,371
Martin	2	0	0	2	1,087
Miami	1	0	0	1	1,250
Noble	2	0	0	2	3,968
Perry	3	0	0	3	5,053
Pike	1	0	0	1	1,500
Posey	29	4	1	24	65,468
Ripley	1	0	1	0	620
St. Joseph	3	0	0	3	4,216
Spencer	2	0	0	2	2,371
Steuben	1	0	0	1	720
Sullivan	3	0	1	2	5,852
Vanderburgh	4	0	0	4	10,129
Vigo	1	0	0	1	1,965
Warrick	2	0	0	2	3,538
White	1	0	0	1	1,107
Total	94	7	4	83	172,744

EASTERN KENTUCKY

Total Completions by Counties

Month—	Comp.	Oil	Gas	Dry	Footage
Bath	2	1	0	1	2,428
Carter	2	1	0	1	2,440
Elliott	19	14	0	5	17,907
Estill	11	10	1	0	12,872
Floyd	27	3	17	7	60,031
Jackson	17	13	3	1	20,898
Johnson	17	3	12	2	25,829

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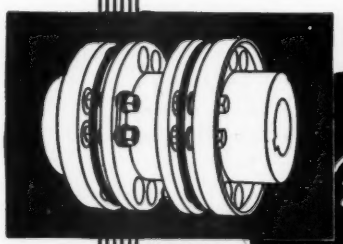
Flexible COUPLINGS

FOR HOT OIL PUMP DRIVES or any other service where 100% Operating Efficiency is demanded



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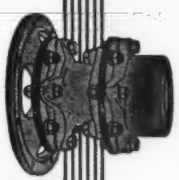

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THOMAS Flexible COUPLINGS provide for Angular and Parallel Misalignment as well as Free End Float . . . and Eliminate BACKLASH, FRICTION, WEAR and CROSS-PULL

NO LUBRICATION IS REQUIRED!

The Thomas All-Metal Coupling does not depend on springs, gears, rubber or grids to drive. All power is transmitted by direct pull.

Write for Complete Engineering Catalog!

THOMAS FLEXIBLE COUPLING CO.
WARREN, PENNSYLVANIA

Month—	Comp.	Oil	Gas	Dry	Footage
Knott	27	2	22	3	62,588
Lawrence	12	7	3	2	3,087
Lee	9	6	0	3	2,512
Magoffin	15	8	7	0	13,220
Martin	11	5	4	2	13,154
Menifee	8	8	0	0	4,465
Morgan	9	4	2	3	1,340
Pike	26	0	26	0	76,751
Powell	2	2	0	0	850
Wolfe	5	3	0	2	2,574
Total	219	90	97	32	322,946

EASTERN KENTUCKY

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	7	2	4	1	19,073
February	19	5	12	2	38,462
March	20	3	11	6	31,649
April	17	9	4	4	20,715
May	11	6	3	2	14,029
June	25	12	6	7	17,244
July	22	8	14	0	28,662
August	25	11	12	2	41,479
September	15	6	7	2	22,238
October	25	14	8	3	29,292
November	17	8	9	0	32,186
December	16	6	7	3	27,917
Total	219	90	97	32	322,946

WESTERN KENTUCKY

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	15	1	0	14	32,551
February	8	0	0	8	21,632
March	3	0	0	3	5,760
April	4	0	0	4	6,327
May	7	4	0	3	13,910
June	8	3	0	5	15,913
July	8	0	0	8	15,572
August	12	1	0	11	27,776
September	10	1	1	8	23,054
October	16	4	0	12	31,144
November	4	1	0	3	7,786
December	10	2	0	8	24,572
Total	105	17	1	87	225,997

WESTERN KENTUCKY

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	23	12	3	8	33,189
February	20	14	0	6	26,864
March	10	6	1	3	13,090
April	13	8	0	5	17,309
May	24	12	0	12	38,852
June	32	19	1	12	43,299
July	47	31	0	16	66,505
August	68	46	1	21	137,076
September	38	25	1	12	64,713
October	58	42	2	14	119,531
November	48	39	0	9	104,866
December	32	2	1	10	60,930
Total	413	275	10	128	726,224

WESTERN KENTUCKY

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	38	13	3	22	65,740
February	28	14	0	14	48,496
March	13	6	1	6	18,850
April	17	8	0	9	23,636
May	31	16	0	15	52,762
June	40	22	1	17	59,212
July	55	31	0	24	82,077
August	80	47	1	32	164,852
September	48	26	2	20	87,767
October	74	46	2	26	150,675
November	52	40	0	12	112,652
December	42	23	1	18	85,502
Total	518	292	11	215	952,221

WESTERN KENTUCKY

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Birk City	8	5	0	3	350
Buford	8	5	1	2	120
Cane Run	5	3	0	2	50
Deanfield	5	5	0	0	69
Dixie	31	27	2	2	6,021
Glennville	4	2	0	2	44
Grassy Pond	5	1	2	2	25
Hitesville	3	2	0	1	260
Huntsville	25	20	1	4	262
East Livermore	3	2	0	1	26
East Poole	26	21	0	5	1,875
Lyonia	3	2	0	1	10
Mt. Zion	8	5	0	3	77
Niagara	4	3	0	1	19
Panther	7	5	1	1	335
Pleasant Ridge	7	2	0	5	45
Poole	42	34	0	8	3,023
Powells Lake	11	9	0	2	480
Rock House	3	2	0	1	17
Smith Mills	10	7	0	3	2,470
St. Vincent	12	10	0	2	4,143
Sturgis	4	0	0	4	0
Uniontown	58	46	1	11	4,007
Utica	13	5	0	8	235
Waverly	40	32	1	7	3,599
Waverly North	4	4	0	0	1,198
Miscellaneous	64	16	1	47	794
Wildcats	105	17	1	87	1,682
Total	518	292	11	215	31,236

MICHIGAN

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	22	0	0	22	60,075
February	8	1	0	7	21,035
March	26	1	0	25	70,327
April	14	1	0	13	38,977
May	24	1	2	21	58,877
June	28	2	0	26	70,007
July	17	2	0	15	45,075
August	21	5	0	16	49,213
September	39	1	1	37	107,016
October	38	2	0	36	97,521
November	26	1	2	23	61,907
December	26	0	3	23	61,530
Total	289	17	8	264	741,560

MICHIGAN

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	52	18	3	31	149,934
February	48	24	2	22	129,632
March	70	27	2	41	190,395
April	48	20	1	27	125,409
May	66	21	10	35	156,955
June	79	24	2	53	185,625
July	56	20	6	30	134,077
August	59	23	5	31	146,136
September	82	21	4	57	218,368
October	73	17	0	56	188,855

CENTROL

Modern UNITIZED Low-Cost Centralized Control Centers

- Standardized, prefabricated sections
- Savings in cost of installation—wired complete
- Savings in space
- Safe—Completely dead front
- Flexible—Additional units can be added easily
- Smart, modern appearance

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Circuit Breakers and Lighting Panels
Oil Field Motor Controls
Automatic Pipe Line Sampling Devices
Cathodic Protection Equipment
Switchboards
Instrument and Control Panels
Unit Substations

Month—	Comp.	Oil	Gas	Dry	Footage
November	63	21	7	35	149,248
December	74	24	12	38	188,191
Total	770	260	54	456*	1,962,825

*Includes two service wells.

MICHIGAN

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	30	18	3	9	89,859
February	40	23	2	15	108,597
March	44	26	2	16	120,068
April	34	19	1	14	86,432
May	42	20	8	14	98,078
June	51	22	2	27	115,618
July	39	18	6	15	89,002
August	38	18	5	15	96,923
September	43	20	3	20	111,352
October	35	15	0	20	91,334
November	37	20	5	12	87,341
December	48	24	9	15	126,661
Total	481	243	46	192	1,221,265

MICHIGAN

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Adams, North	9	3	0	6	1,510
Bangor & North	7	2	0	5	35
Bloomer	9	4	1	4	415
Breedsville	16	6	0	10	575
Coldwater	58	46	7	5	20,689
Colfax	9	0	3	6	0
Cranberry Lake	9	0	4	5	0
Dalton	5	2	0	3	40
Deep River	68	44	1	23	83,867
Essexville	24	20	0	4	2,006
Evart, East and West	13	0	5	8	0
Fillmore	31	20	0	11	847
Fork	19	10	5	4	2,244
Kawkawlin	11	11	0	0	508
Monterey, South	22	8	0	14	475
Norwich, East	21	18	3	0	1,920
Reed City	16	16	0	0	2,453
Winterfield	7	0	2	5	0
Miscellaneous	127	33	15	79	1,930
Wildcats	289	17	8	264	1,184
Total	770	260	54	456	120,698

MICHIGAN

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Alcona	1	0	0	1	1,995
Allegan	32	3	0	29	51,746
Alpena	1	0	0	1	2,643
Antrim	1	0	0	1	4,593
Arenac	13	0	0	13	38,981
Bay	5	1	0	4	15,893
Barry	1	0	0	1	1,934
Cass	1	0	0	1	850
Clare	7	1	2	4	20,514
Clinton	4	0	0	4	12,779
Crawford	1	0	0	1	4,317
Genesee	4	1	0	3	7,459
Gladwin	3	0	0	3	10,755
Gratiot	4	0	0	4	11,467
Hillsdale	1	0	0	1	1,629
Huron	4	0	0	4	12,374
Ionia	5	0	0	5	14,412
Isabella	15	1	1	13	43,845
Kalamazoo	8	0	0	8	10,401
Kent	19	1	0	18	43,157
Lake	5	0	0	5	16,992
Lapeer	3	0	0	3	6,343
Livingston	3	0	0	3	13,419
Mecosta	21	1	1	19	57,599
Midland	9	0	0	9	35,607
Missaukee	6	0	0	6	23,794
Monroe	1	0	0	1	3,377
Montcalm	18	2	0	16	52,723
Montmorency	2	0	0	2	4,911
Muskegon	7	0	0	7	13,518
Newaygo	11	0	1	10	23,071
Oceana	5	0	0	5	12,433
Ogemaw	4	1	0	3	10,483
Osceola	12	3	2	7	33,599
Otsego	1	0	0	1	1,940
Ottawa	9	0	1	8	13,086
Roscommon	5	1	0	4	21,951
Saginaw	5	0	0	5	16,660
St. Clair	2	0	0	2	1,866
Sanilac	3	0	0	3	8,632
Tuscola	5	1	0	4	15,966
Van Buren	15	0	0	15	17,760
Washtenaw	5	0	0	5	16,954
Wexford	2	0	0	2	7,132
Total	289	17	8	264	741,560

OHIO

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	51	10	23	18	135,906
February	59	15	17	27	177,107
March	65	13	29	23	191,401
April	68	13	24	31	193,126
May	70	18	31	21	173,802
June	118	28	53	37	284,992
July	82	23	32	27	219,039
August	85	20	39	26	207,291
September	123	22	44	57	339,456
October	97	23	35	39	245,090
November	96	18	42	36	254,932
December	100	23	35	42	266,589
Total	1,014	226	404	384	2,688,731

OHIO

Development Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	47	10	23	14	124,156
February	49	15	14	20	139,993
March	59	13	27	19	168,814
April	60	13	23	24	161,483
May	64	18	30	16	152,227
June	109	28	51	30	255,144
July	77	23	30	24	199,030
August	80	20	39	21	187,389
September	113	22	44	47	305,611
October	92	23	33	36	227,623
November	90	18	41	31	229,919
December	92	23	34	35	242,556
Total	932	226	389	317	2,393,945

Wildcat Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	4	0	0	4	11,750
February	10	0	3	7	37,114
March	6	0	2	4	22,587
April	8	0	1	7	31,643
May	6	0	1	5	21,575
June	9	0	2	7	29,848
July	5	0	2	3	20,009
August	5	0	0	5	19,902
September	10	0	0	10	33,845
October	5	0	2	3	17,467
November	6	0	1	5	25,013
December	8	0	1	7	24,033
Total	82	0	15	67	294,786

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OHIO

Development Completions by Fields

Field—	Comp.	Oil	Gas	Dry	Prod.
Ashland-Lorain-Medina	256	36	126	94	578
Brush Creek-Zanesville	109	43	32	34	946
Cambridge	196	52	78	66	542
Clayton	19	14	1	4	617
Lancaster	106	28	40	38	1,127
Mt. Vernon-Lancaster	80	23	24	33	709
Sandyville	66	2	50	14	82
Stewart	100	28	38	34	570
Wildcats	82	0	15	67	0
Total	1,014	226	404	384	5,171

Wildcat Completions by Counties

County—	Comp.	Oil	Gas	Dry	Footage
Ashland	2	0	1	1	7,899
Athens	2	0	0	2	4,833
Belmont	1	0	0	1	7,455
Carroll	2	0	0	2	9,123
Columbian	5	0	0	5	26,643
Coshocton	5	0	1	4	17,265
Gallia	1	0	0	1	1,786
Guernsey	2	0	0	2	7,895
Harrison	1	0	0	1	6,301
Hocking	2	0	1	1	4,164
Holmes	2	0	0	2	7,319
Licking	2	0	0	2	4,834
Lorain	5	0	1	4	12,549
Mahoning	2	0	1	1	8,934
Medina	10	0	2	8	31,284
Meigs	1	0	0	1	1,802
Morgan	2	0	0	2	8,675
Muskingum	14	0	3	11	52,996
Perry	3	0	1	2	9,913
Portage	1	0	1	0	3,945
Richland	1	0	1	0	2,642
Ross	1	0	0	1	2,325
Stark	2	0	1	1	9,458
Summit	3	0	0	3	11,010
Tuscarawas	3	0	1	2	12,782
Washington	4	0	0	4	10,821
Wayne	3	0	0	3	10,133
Total	82	0	15	67	294,786

NEW YORK

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	82	41	0	41	119,203
February	84	42	0	42	121,036
March	101	51	0	50	146,010
April	138	69	0	69	199,520
May	119	60	0	59	171,360
June	137	69	0	68	197,000
July	137	69	0	68	197,300
August	132	66	0	66	191,201
September	134	67	0	67	192,163
October	128	64	0	64	185,200
November	124	62	0	62	178,157
December	107	54	0	53	155,237
Total	1,423	714	0	*709	2,053,387

*Includes 709 service wells.

PENNSYLVANIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	219	106	20	93	397,250
February	273	118	37	119	494,761
March	306	141	29	136	525,310
April	335	170	27	138	558,830
May	315	148	28	138	524,620
June	364	186	22	156	587,300
July	354	177	31	146	549,625
August	317	160	25	132	524,340
September	325	155	32	138	519,470
October	298	165	26	107	548,201
November	272	131	25	116	464,467
December	264	131	20	113	475,301
Total	3,642	1,788	322	*1,532	6,169,475

*Includes 1.467 service wells.

WEST VIRGINIA

Total Completions by Months

Month—	Comp.	Oil	Gas	Dry	Footage
January	49	4	39	6	123,464
February	66	3	55	8	171,542
March	75	8	58	9	213,134
April	59	5	43	11	146,310
May	65	8	53	4	138,724
June	85	8	62	15	188,936
July	79	14	59	6	212,066
August	76	10	49	17	121,650
September	67	8	47	12	178,862
October	63	6	35	22	176,606
November	59	9	34	16	155,909
December	63	9	43	11	175,031
Total	806	92	577	*137	2,002,234

*Includes one service well.

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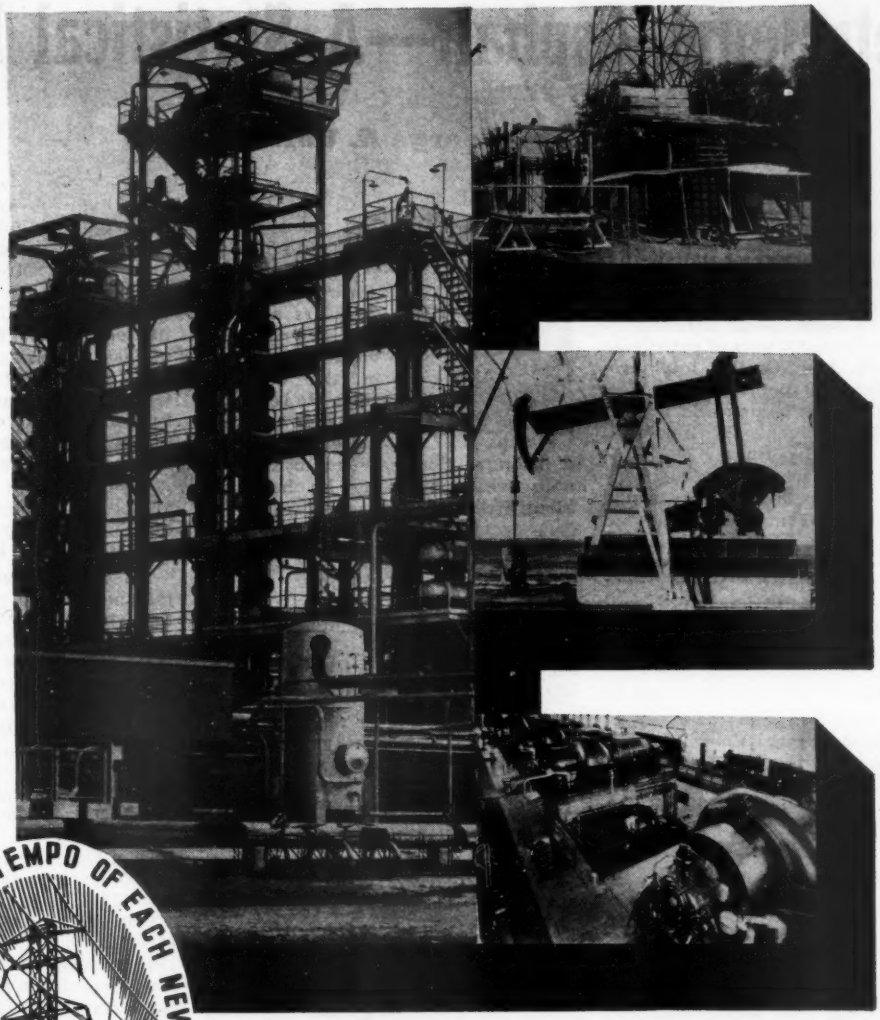

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Utilization, Trends, and Future Prospects of Petroleum Asphalt—A Statistical Report

by George R. Christie

Utilization

ACCORDING to the reports of the Bureau of Mines for the past 5 years, the ten oil refining fields of the United States have produced, and there have been sold, upward of 7,000,000 to 8,000,000 tons of petroleum asphalt each year. Of this total production about 70 per cent has been used annually for paving and the remaining 30 per cent for industrial uses, principally roofing.

In the war years, although a very large tonnage was taken by the armed forces, these percentages of use did not vary greatly. Military roads and airports here and overseas required asphalt paving, and still kept the paving portion approximately 70 per cent; military structures requiring asphalt roofing and other war needs for a binder, cushion, insulating, or waterproofing agent still entered about in proportion into the 30 per cent balance.

G. R. Christie has been associated with The Asphalt Institute since its inception 26 years ago, and last month was elected president of the organization. He is asphalt manager of the eastern marketing division of Socony-Vacuum Oil Co., with which company he has been identified for 30 years.

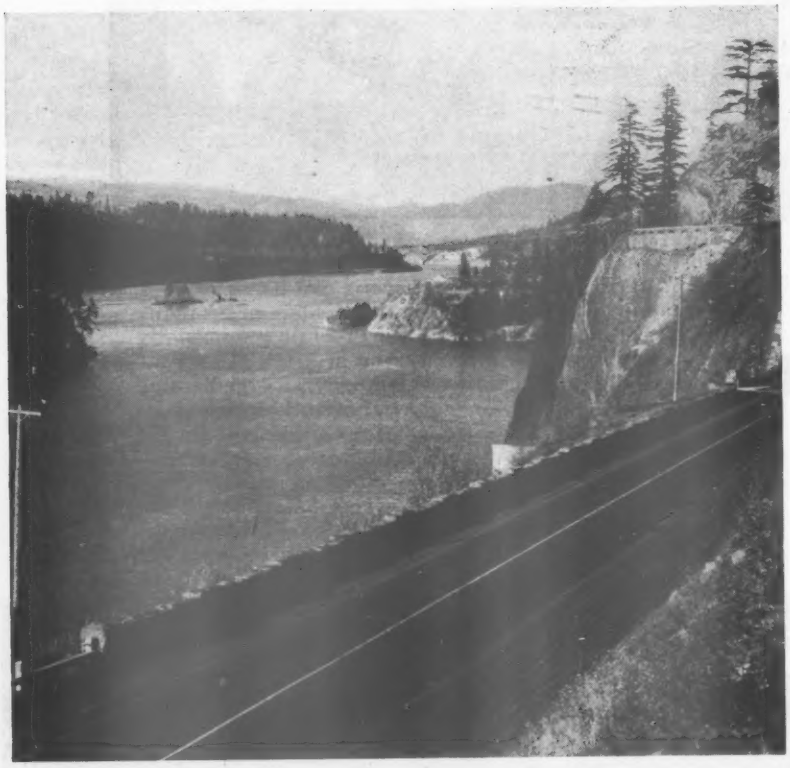
In prewar years several millions of tons of petroleum asphalt were used annually in the course of maintenance for resurfacing and widening the 430,000 improved miles of the nation's state highway systems. A large tonnage too was used for the tributary "feeder" roads of counties and towns and on the streets of the nation's cities.

In the entire United States approximately 650,000 miles of the upward of 3,000,000 miles of roads and streets have paved surfaces ranging all the way from surface treatments to high-type asphaltic concrete and sheet asphalt. Of this improved mileage the Asphalt Institute estimates that nearly 500,000 miles are of asphalt. Included in this total is 80 per cent of the improved street mileage of all the cities in the United States.

On the 48 state highway systems for the past 20 years, new construction, bringing roads up to surface-treated standards or better, has totaled 257,000 miles, or an annual average of nearly 13,000 miles. As three-fourths of this construction was of bituminous types, new construction represents another very large use of petroleum asphalt for paving. Parenthetically, this state construction work averaged less than 4,000 miles per year during the war-dislocation period, a falling off from an average of 16,000 construction miles per year from 1925 to 1940.

(The state highway system statistics given herein for the years 1930 to 1945 inclusive are based upon the annual record included in "American Highways," the official publication of the American Association of State Highway Officials.)

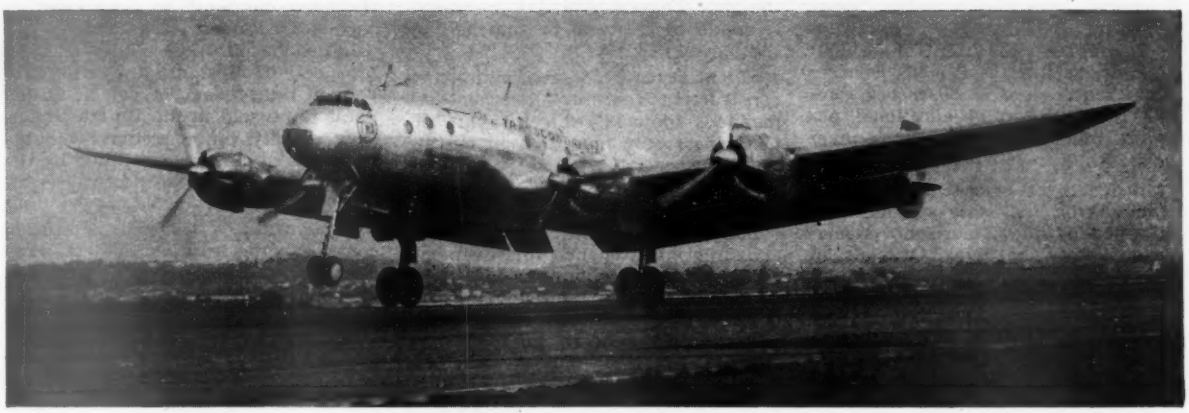
Natural water-grade route is followed by the new Columbia River highway in Oregon. This view shows asphalt highway entering Tooth Rock tunnel



Trends

As already shown, new construction mileage on the state highway system since 1940 has averaged per year only about 25 per cent of the annual average of the preceding 15 years. War tonnage, however, compensated both for this loss and also for the unavoidable reductions in road maintenance, so that there was no break (except slightly in one year) in the long-continued upward trend in petroleum asphalt use.

Back in the beginning of the nineteen twenties, in 1921, annual petroleum asphalt production in the United States was less than 1,500,000 tons. By 1930 it was 4,000,000 tons; by 1940 it was 6,500,000 tons; gaining every successive year except for a depression recession amounting in all to a



T.W.A. Lockheed Constellation landing on asphaltic-concrete runway at Washington National Airport at end of record-breaking flight from Burbank, Calif. Elapsed time was 6 hours, 58 minutes

25 per cent drop in 1933 compared to 1929.

The increase to between 7,000,000 tons and 8,000,000 tons in the 1940s represents a slight slowing down in the rate of gain, but the fact of any increase in these years reflects the versatility of the product.

An interesting factor related to the long upward trend in petroleum asphalt tonnage is the increasing percentage of the total that has been used for paving. In the 1920s this was about 55 per cent, but, gaining steadily, by the late '30s and early '40s this has reached and passed 70 per cent.

This substantial gain has coincided exactly in time with the development of liquid grades for paving, particularly cut-back asphalt. Suited particularly to low-cost highway construction, this product increased its share of the petroleum asphalt total from 100,000 tons in 1929 to 1,700,000 in 1940 and now averages over 2,000,000 tons annually. The Asphalt Institute, in cooperation with the Federal Public Roads Administration, played an important part in cut-back asphalt development.

The trend of asphalt mileage construction has, quite naturally, coincided with the tonnage trend. Bituminous types of construction on the state systems in 1925 totaled 31,000 miles; in 1930 increased to 58,000; in 1935 to 118,000; in 1940 to 195,000; in 1945 reached 222,000. All other improved types combined ranged from a total of about 25,000 miles in 1925 to less than 90,000 in 1945.

While over 100,000 miles of the present asphalt mileage is of low-cost types, the highest upward mileage percentage trend at the present time is in the highest quality product—high-type asphaltic concrete. The total miles of increase, too, in asphaltic concrete construction during the past 5 years has been greater than for any other paving type.

Future Prospects

Mathematically, present conditions of use of petroleum asphalt and trends point to potential future prospects as shown herewith. These are not, however, presented as definite predictions.

A substantial tonnage of petroleum asphalt, well above the roofing totals of prewar years, will be used in the form of asphalt roofing and sliding squares for the millions of new houses to be erected.

The growing aviation industry will require a more complete network of airports. There should be approximately 6,000 locations in this network; their runways should all be surfaced with some type of petroleum asphalt paving. How many will be is a "$64 question." For every requirement an asphalt runway will give the needed service most efficiently at an economical cost.

In considering future prospects it is most important, however, to study in some detail how much asphalt will be required for its major use of maintaining, widening and resurfacing the old mileage and constructing new mileage on state highway systems.

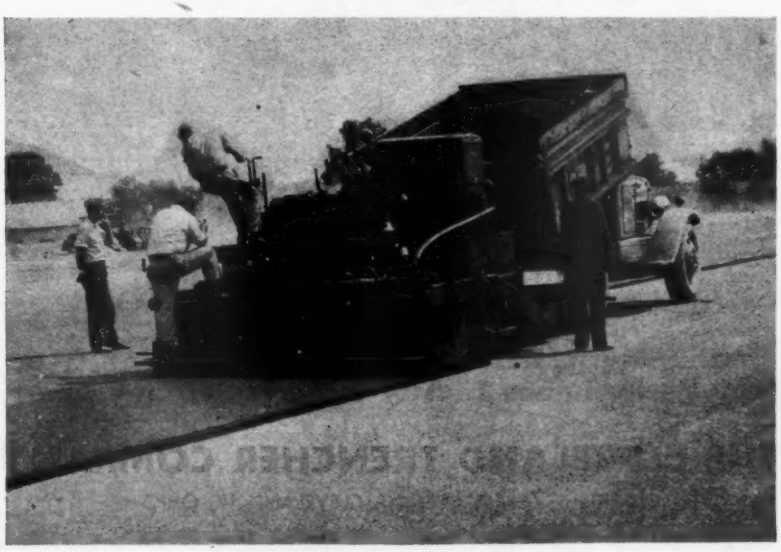
In the years just preceding the war the 48 states were using approximately 2,000,000 tons per year for routine maintenance. For some time ahead now, due to several years of unavoidable slowing down in such work, this annual amount should be greatly increased.

In addition, what might in a general sense be considered maintenance, the widening and resurfacing of many miles of the present network will require another large tonnage.

The American Association of State Highway Officials estimates that about 160,000 miles of its state systems should be widened or rebuilt. While asphalt more than any other material is suitable for this purpose, no exact calculation of the tonnage required in carrying out such a program is possible.

Varying additional widths will be built, but as an example of the size of this portion of the market, one

Spreading asphaltic concrete on a macadam base at an airport



additional lane and 2 in. of resurfacing of existing 18-ft. highways would require 180 tons of asphalt per mile. On this basis, 160,000 miles would require nearly 30,000,000 tons. This is a substantial additional potential tonnage to be spread over the next 10 or 15 years.

Mileage to be relocated (new construction) on the state systems was estimated by the American Association of State Highway Officials in 1943 at approximately 37,000 miles. The present new construction figure would be considerably higher, however, as the 40,000-mile network of "Interstate Highways" has been approved and an appropriation under the new Federal Aid Act specifically made therefor, to be matched by the states.

Potential requirements for this new construction represent another tremendous tonnage subject to the effectiveness of competition in cutting it down.

Long-Future Picture

For the long future, in the road and street maintenance, improvement, and new construction program upon all state, county, and town roads and city streets in the United States, it should be kept in mind that of the 3,215,000 total mileage only approximately 650,000 miles have thus far been improved to the extent of surface treatments or better.

In conclusion, there is then a sound prospect of substantial growth each year in the tonnage of petroleum asphalt to be sold in the United States. How rapidly the percentage mounts is, of course, largely controlled by the speed with which the postwar economy gets going.

Asphalt for water control, erosion control, better railroad ballast, low-cost housing construction and for soil stabilization are all in the picture. To stabilize a single mile to serve as a low-cost base to underlie a highway surface is estimated to require 200 tons of asphalt, and the market would be many tens of thousands of miles. Research work already done has led to a considerable development of asphalt in this field.

In short, there should be a very great and rapid increase in asphalt tonnage in the years ahead and, as its predominant use is to build and maintain roads over which gasoline and motor oils will be increasingly used, its promotion is a "natural" for the petroleum industry.

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California Plans Fight for Oil-Bearing Tidelands

SACRAMENTO.—Both houses of the state legislature instituted action last week to aid California's defense against the suit brought by the federal Government for ownership of oil-bearing and other tidelands adjacent to the state's shores.

A bill appropriating $150,000 to finance the state attorney general's participation in the U.S. Supreme Court proceedings was introduced.

A state senate resolution would create a joint special committee to attend hearings of the U. S. Senate judiciary committee on legislation designed to waive the government claims and concede that California has title to the tidelands.

Higher Prices for Oil and Gas Forecast by Texans

AUSTIN.—Higher prices for oil and natural gas are predicted by two members of the State Railroad Commission.

Olin Culberson, chairman, said demand for Texas petroleum will continue high this year, and that the price of crude oil should be advanced 50 cents a barrel to cover the increased cost of operations, particularly exploration for new reserves.

Ernest O. Thompson, commissioner, expressed a similar view, and asserted that contracts will be written for future delivery of natural gas from Texas at 10 cents per 1,000 cu. ft., more than double the average prevailing price at the wells.

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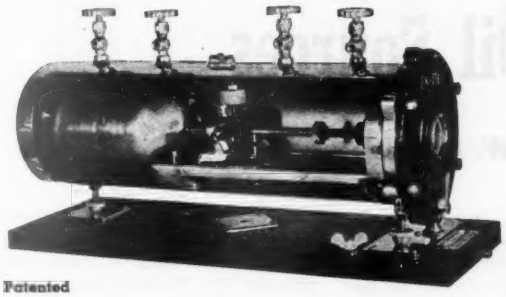

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Caribbean and Middle East Enlarge Stature as Oil Sources

by Warren W. Burns

NEW YORK. — With the Petroleum Administration for War's former program director, Howard Page, back in Washington to revise PAW's November figures on world-wide petroleum supply—due to current sweeping changes in the over-all picture—sources here are hesitant to predict the shape of things to come in 1946.

However, one oil man, W. A. Sinsheimer, vice president of Petroleum Advisors, Inc., who believes that world production this year will be pretty close to world demand, has obligingly predicted the domestic production level for 1946 and the three subsequent postwar years.

Assuming a more or less constant domestic production level of 4.45 million barrels per day for the first four postwar years, the supply and demand balance sheet, he says, will approximate figures in Table 1.

TABLE 1—DOMESTIC PETROLEUM SUPPLY-DEMAND BALANCE SHEET

(Thousands of barrels daily)

	1946	1947	1948	1949
Total crude demand	4,230	4,520	4,800	5,130
U.S. crude supply	4,350	4,350	4,350	4,350

On the basis of Table 1 there would be a surplus in only 1 year, 1946, and that of only 20,000 bbl. daily. However, Sinsheimer hastens to state that his figures are only a "considered guess" and that he's not unmindful that latest indications from the military will hike demands, for the first quarter of 1946 anyway. He adds however that the figures point to two useful conclusions:

First, that there is no need for selfish consideration—industry, national or international—to enter the postwar oil producing picture. There is ample demand in sight for every barrel our domestic industry can bring to the surface without waste, and considerable need for imports in the bargain.

An Industry Obligation

The second conclusion is that the industry owes it to the national interest as well as its own future to cooperate actively with the proper regulatory authorities in producing all existing fields at their most efficient rate and of developing new sources of supply in accordance with the most advanced engineering principles, in order that the nation's oil resources may be brought to the surface at the maximum rate consistent with the principles of conservation.

After 1946, this oil man believes that the U.S. will be able not only to put to work more crude oil than it ever produced before the war—a volume probably equal to its current maximum efficient rate of production—but can employ a substantial volume of imports as well. Moreover, he told the Journal, that with the expanded production of crude and products in the Netherlands East Indies that California will be eliminated as an exporter to the Far East and the Orient and that a daily production of 650,000 bbl. daily in this West Coast state (as compared with 950,000 during the war) will satisfy demand. But he doesn't look for this to happen until the end of this year and possibly not until 1947.

Possibly the Standard Oil Co. of California visualizes lost markets in the Pacific area for currently this company is shipping gasoline from its West Coast refineries to the New York area. Plans are now under way to market California Standard gasoline here under the brand name "Calso." Moreover, it's learned that approximately 24 stations in the New York area will open shortly and handle only "Calso" gasoline, gasoline with approximately an 84-octane rating. Then, there's even speculation that California Standard, eventually, will be supplying its East Coast market from the Mediterranean area.

Table 2 shows estimated crude production for foreign countries, exclusive of Europe and the Far East, for 1944 and 1945. The estimates are a compilation from various reliable sources and indicate changes in producing operations which will continue in 1946.

TABLE 2—ESTIMATED FOREIGN CRUDE-OIL PRODUCTION

(Exclusive of Europe and Far East)

(Barrels daily)

	1944	1945	% change
Caribbean area—			
Venezuela	702,300	887,500	+26.4
Colombia	60,900	60,500	— .7
Trinidad	59,000	58,000	— 1.7
Total Caribbean	822,200	1,006,000	+22.4
Mexico	103,900	118,000	+13.6
Argentina	66,200	62,000	— 6.3
Peru	39,300	37,500	— 4.6
Balance Latin America	9,100	8,300	— 8.8
Canada	26,600	22,500	—15.4
Total W. Hemisphere	1,067,300	1,254,300	+17.5
Middle East—			
Iraq	86,900	96,000	+10.5
Egypt	25,900	26,000	+ .4
Iran	282,000	350,000	+24.1
Bahrein and Arabia	39,600	68,000	+71.7
Kuwait	.....	3,000	.....
India	7,600	7,000	— 7.9
Total Middle East	442,000	550,000	+24.4
Total foreign, excl. Europe and Far East	1,509,300	1,804,300	+19.5

Terms of Oil Settlement With Mexico Disclosed

MEXICO CITY.—Terms of Mexico's $23,995,991 settlement with United States oil companies for expropriation of their properties 8 years ago have been published in the official gazette. The foreign office says the Senate decided 4 years ago, after the terms had been agreed upon by representatives of the United States and Mexico, that ratification by the Senate was not necessary.

Mexico is making annual payments under the terms. The total is apportioned as follows: Standard Oil Co. of New Jersey, $18,391,641; Standard Oil Co. of California, $3,589,158; Consolidated Oil Corp., $630,151; Sabalo group, $897,151; Seaboard group, $487,370.

The Natural Gas Act and the Oil and Gas Producer

by Walace Hawkins

ANY discussion of the oil and gas producer, the American oil and gas producing industry, and the Natural Gas Act should begin and end with one sentence—the Natural Gas Act of 1938 does not apply to the oil and gas producer and producing business. The American Congress minutely defined the scope of the Natural Gas Act and thereby brought under federal regulation for the first time two distinct types of interstate commerce, namely, the transportation of natural gas in interstate commerce and interstate sales of natural gas for resale. Lest there be doubt concerning what the act did apply to, it further stated what the act did not cover, namely, "the production or gathering of natural gas," matters which were neither transportation nor interstate commerce. The simple language used is as follows:

"The provisions of this Act shall apply to the transportation of natural gas in interstate commerce, to the sale in interstate commerce of natural gas for resale for ultimate public consumption, for domestic, commercial, industrial, or any other use, and to natural gas companies engaged in such transportation or sale, but shall not apply to any other transportation or sale of natural gas, or to the local distribution of natural gas, or to the facilities used for such distribution, or to the production or gathering of natural gas."

At the time of this enactment, the regimen and habits of the natural gas business had hardened into recognizable forms and practices; the long absence of federal entry into the field had given the courts ample opportunity, and they had definitely defined that which was national and subject to uniformity of control and that which was local characterized by diversity. The judges had marked out the constitutional reach of the police and tax powers over the natural-gas industry of the state of origin as well as the state of destination. Thus the Congress was able, with nicety of language, to pick out those restricted types of interstate commerce in natural gas which it desired to subject to federal regulation and Federal Power Commission control as well as to define those areas of the business, whether subject to constitutional control or not, which it did not desire to enter.

Walace Hawkins has been associated with the legal department of Magnolia Petroleum Co. since 1925, when he succeeded W. H. Francis. He is a graduate of University of Texas law school. In 1921 he was named assistant attorney general and served until 1924, when he resigned to enter private practice in Houston. Late in 1939 he was elected vice president and director of Magnolia Petroleum Co. and Magnolia Pipe Line Co.

The need for national regulation was so identified with such well-defined types of interstate commerce that the explicit words of delegation contained in the act did not include the customary power to regulate that which affected or was affected by interstate transportation and sale for resale; neither did Congress, in describing the power delegated to FPC, employ the trite phrase "and otherwise to effectuate the policies of this Act." Neither the legislative history or purpose nor any uncertainty with respect to the adjudicated dimensions of the fissure arising from the regulatory incompetence of states can enlarge the scope of this legislation. To concede that Congress forbade the application of the Natural Gas Act to the oil and gas producing business and excluded FPC from any control or regulation of such producing and gathering business, and at the same time to assume that there is such regulation and control under the law and orders of FPC, must inevitably raise the question of authority and validity of such control.

In many states thousands of state officials and producers of oil and gas, big and little, are now as much concerned and are as earnestly anxious about federal administrative control, direct or indirect, partial or incomplete—by the yardstick method or otherwise—as they were in 1940 when, by the rejection of the Cole Bill, control of the business was defeated. Those who are against national control of the oil and gas producing business can no longer merely defend against threatened legislation. Administrative federal control as contradistinguished from legislative control makes this so. Usurped power may still be exercised by the commission well within interstate commerce, and therefore the one who objects is deprived of constitutional protection. Hence the legal question usually is a mundane one—are the orders of the commission within or beyond legislative power. The present judicial tendency is to permit FPC to push its powers to, if not beyond, legislative limits. Therefore, the true situation is, there being no constitutional protection and judicial relief against usurpation being unpredictable, that those who oppose the system can only be heard by becoming advocates and proponents of national legislation.

2.—Sale for Resale

How many oil and gas leases and producers are now natural-gas utilities or can be reasonably expected to become natural gas utilities? All producers who operate interstate transportation lines now know their leases are public utilities, dedicated to public use and clothed with public interest. That Congress might be willing to excuse disobedience to its orders on the ground that this is so only indirectly does not lessen the directness or certainty of the utility status of such leases and producers. It may be said that interstate gas pipe line companies having their own leases and production are few and the imposition of utility status on them is a small matter. This viewpoint overlooks another readily available method by which oil and gas leases and their operators may be brought within the fold as a natural gas utility.

An oil and gas producer guilty of making a sale of his gas for interstate resale may fasten the so-called indirect utility status on his lease and operations as firmly as the pipe line company has subjected its leases and production. Here again the oil and gas producer may plead that Congress forbade in plain language the application of the law to "production and gathering." His argument that the constitution protects and prevents the taking of private property without consent for public use may be but politely noticed. The Mexico incident illustrates. It will be said that he voluntarily made the sale, innocently or otherwise; hence, he cannot complain that he has not dedicated his property to public use. Will his contention and insistence to the court that FPC, in thus impressing his property with utility status because he has made such a sale, have a favorable chance of success? May it not be expected that he will be told again that the utility status of his

lease results only by indirection; that a forced bookkeeping system imposed on him is but incidental and meaningless?

Whether a producer's sale for resale carries interstate guilt will not be determined by the Congress or by standards contained in a law if the present regime persists; it will not ordinarily be determined by the courts. The interstateness of a producer's sale for resale, it must be expected, will be largely determined as a fact by the statutory delegated expertness and discretion of FPC. The time is desperately near at hand when any realist must advise that whether an oil and gas lease or its producer who accidentally or purposely sells to an interstate purchaser is a public utility or not rests almost completely with the tender mercies of FPC.

Of course the sale for resale which Congress subjected to FPC's jurisdiction was in fact a wholesale sale of gas transported from the state of origin to a state of destination and there sold by a pipe-line transporter to a known nonaffiliated distribution company. This was the only sale in which the Congress was interested. It was the only sale theretofore adjudicated as free and immune from effective state regulation. It was a sale for resale which was an interstate wholesale sale. It was a sale made by an interstate pipe-line transporter. It was a sale of gas transported from one state to another. It was a sale to a purchaser who was a local distribution company. The seller as well as the purchaser knew at the time of the sale that the gas was interstate gas which could only be used for distribution to consumers.

The producer's sale at the lease to a purchaser has practically none of these characteristics. In the first place it is not the sale of transported gas, either state or interstate. The gas at most is merely produced or gathered gas. The seller of the gas is not a transporter but a producer or gatherer. The sale is not a wholesale sale. The interstate pipe line purchaser may or may not transport the gas in interstate commerce. The gas may or may not be resold to an out-of-state distribution company for resale. The sale is an incident of production and not an event of transportation. Such sale is the terminal act of production and gathering; it is neither the initial act of transportation nor is it an element of regulated transportation.

The majority of the commission on rehearing once professed that the producer's and gatherer's sale was without the jurisdiction of the commission and that the commission had no right to regulate and fix the price of such sale. It would not straitjacket with accounting power. While that declaration by the majority has not been directly overruled, the minority's viewpoint has since been advocated, urged and judicially recognized. The best evidence demonstrates that the Commission's power over sale for resale is being exploited carefully and erosively, but nevertheless gradually and certainly subjecting more and more producers and oil and gas leases to commission accounting and other control as well as price regulation. I have indicated in the notes the indicia of this tendency. The statute does not define immunized gathering and production. It does not enumerate by types that transportation of natural gas subjected to regulation. Under ordinary administration, it was unnecessary. What transportation is within the scope of the Act and what is without again largely rests with the statutory expertness of a commission heretofore committed to a policy of pressing its jurisdiction to the very limits of and even beyond statutory permission. It may therefore be reasonably expected, assuming that present policy continues, that production and gathering, by so-called fact finding, will be cut down to the narrowest scope and area and that transportation will be broadened and enlarged to the utmost.

Hence there is substance to the fear that all producers and gatherers, either because such producers operate a pipe-line transmission company or because their sales are simulated as sales for resale, will be subjected to the jurisdiction and control of FPC. The fear that a utility status will be imposed on such leases by the commission is so strong that even waste gas fails to go to interstate pipe lines.

3.—Just and Reasonable Rates for Interstate Transportation and Sale

For some 5 years it has seemed to those who hold the producer's point of view and perspective that a national commission with traditional rate-making power over interstate transmission and sale of natural gas could not lawfully revolutionize the oil and gas producing business. Interstate natural-gas transmission and sale for distribution has been indifferently sketched in as a minor detail with production and gathering as the dominating feature of the general oil and gas business. It is an entirely new scene to many of us where interstate natural gas transportation or sale is dramatized and is made to steal the whole show. Such is not an admissible view of the industry. The use of conventional rate-making power over the relative, minor, incidental business of interstate transportation of natural gas as an avenue to reach and dominate the center and heart of the oil and gas business is at least revolutionary. Has FPC so exercised its powers to make just and reasonable rates for interstate transportation and sale of natural gas in such a manner as to leave undisturbed "all other matters which were then subject to state regulation, which included rate-making for production and gathering"? The current investigation being made by the Commission implies at least that it has grave doubts of the adequacy and correctness of its previous orientation and perspective.

The Commission, in an ex parte hearing, without testimony and so far as is known without conducting a test, found and determined that its power to fix interstate transportation and gas rates was sterile because the Congress had immunized production and gathering. It did not elect to report its conclusion to Congress and ask for instructions. On the other hand, deeming itself to be in extremis on the ground of self-serving necessity, it swept aside the congressional obstacle and (a) boldly applied the very "key to effective regulation" to the producer and his producing and gathering properties. Having done this, it then (b) followed with "these new and more expeditious methods of rate determination," notwithstanding it had been represented to Congress that such power was of the "standardized" kind and by no means "novel." Earnings, as contradistinguished from rate-making, were restricted by order to 6½ per cent on a selected depreciated original cost basis. In fine, subjective administrative necessity made the law for production and gathering which Congress had plainly and deliberately declined to make.

Oil and gas leases and producers and the production of oil and gas were made public utilities in reality, regardless of the indirectness and subtlety of the method. The foundation of the utility status does not rest upon congressional mandate but upon administrative finding of necessity and vertical exploitation of the conventional rate-making power over a wholly different but related industry. This result, not visualized by the law-making body of the nation, coincidentally or otherwise, is the exact result recommended in January of 1939 by the National Resources Committee. Thus administrative control of the managerial type regiments an oil and gas producer and oil and gas producing leases and measures earnings at 6½ per cent of the depreciated cost of the leases and production. Chairman Manly stated that doubt as to the propriety of applying such regulatory principles to the producing business, "more erratic, irregular and unpredictable in relation to investment than any phase of other utility business," had been dissipated. Just when and where this was done does not appear. He believed that the application of the utility principle to the oil and gas producing business was "peculiarly necessary." As was to be expected, the application of the rule at once produced what Justice Jackson was pleased to describe as a

fantastic delirium, namely, five leases having a sworn market value of three million dollars were solemnly accepted at $4,244.24. It must be noted that not a single one of the digits is an odd number.

The reasons and arguments why such regulatory device and rule so peculiarly necessary is inapt, inappropriate and unworkable have been variously stated. "Man cannot produce or reproduce a natural gas field"; more money is invested in nonproducing than in producing property; more investment, not to mention effort, work and skill, fails to produce any gas than is invested or employed in gas producing properties; there is as much if not more costs, investments, and market value in oil and gas leases that never have and never will produce a cubic foot of gas than there is in producing leases; in an undertaking where the law of averages cannot be relied on, certainly an arithmetical percentage of costs for limiting earnings is an academic dream.

The oil and gas producer never has and never will write a reliable prospectus of investment and earnings in exploration or in wildcatting. Those who try that and use the mails are sent under national law to the federal penitentiary. An oil and gas producer has not and cannot limit his investment to a percentage of the value of that which he may find. There is no means or method for an oil and gas producer to limit his drilling costs, either of an exploratory or developmental type, to a percentage of the value of that which he expects to produce. Lifting costs, if they follow any general pattern, run contrariwise to production costs in any other business. The producer's earnings come from what is hidden in the ground and not from what he invests in the lease. No banker ever loaned money on such a cost principle. Measuring earnings by costs is like finding the length of a rope by the liquid measure table.

Valuation, book or otherwise, of leases and oil and gas production as a means for measuring return does not even have the virtue of an experiment. The Congress, the American industry, governmental officials, commissions, and bureaus earnestly tried it barely more than a quarter of a century ago, utterly failed, and deliberately abandoned such a scheme. The literature on the subject is scarcely history. Congress and congressional policy for more than 28 years have been recognizing the hazards and risks peculiar to the oil and gas producing business. It has established and consistently maintained hazard-recognizing provisions in national legislation and has thereby produced a healthy flow of risk and re-risk capital into the treacherous business. Congressional policy is directly the opposite and reverse of FPC policy. Congress disregards prospecting and drilling costs in measuring and determining return, whereas the commission blandly undertakes to measure such return by a flat percentage of costs. Congress accepts production revenues with stated discounts as a means of measuring earnings, whereas the commission disregards production revenues and uses original costs for such purpose. The commission awards discovery value to the consumer. The congressional regulatory method, vindicated by 28 years of experience and two wars, has proved its validity and correctness and practicality.

Risk and rerisk investments restricted to 6½ per cent return cannot be expected to find, produce, and make available either the discovered or the undiscovered natural gas of the country. Discovery value is the very life blood of the industry. The application of the rule in the long view with such results can neither be in the interest of investors in pipe lines nor the consumers. Such a rule may well destroy the ability of our nation to defend itself. The consumers are the preferred beneficiaries of the commission regime. The application of the rule to production destroys rather than creates reserves. It tends to drive the oil producer to a deliberate election to waste gas rather than to conserve it. The hard logic to him is that it is cheaper to do so. Application of the principle has or will result in a bureau-created, artificial, competitive fuel program.

But it is argued for marginal and semimarginal, high-cost production properties, and integrated gas pipeline companies in noncompetitive production areas that utility status with 6½ per cent return is preferable to the normal return on nonutility property. It is proclaimed that the commission's liberal scheme promises such producers all their costs back, full return of all dry-hole money, lush allowances measured by prodigal, statutory experts to permit risk and rerisk investments in exploration and production, and an assured return of 6½ per cent; also, an ambiguous promise or warning of reduced return on transmission properties to the recalcitrant producer who fails to enjoy managerial regulation and control of producing properties.

In reply, it should be observed that such promises are not guarantees. Abandonment certificates are the sole tangible remedies of the commission. Such a view is a short and local one. Such a policy may have justifiable and reasonable application under some local situations and phases of gas production for the protection of the consuming interest. It fails to meet the requirements of uniformity necessary to a national policy in the public interest. Production is too diverse for federal uniform control. Such a program entirely fails to take into account and recognize the admitted legitimate interests of the American oil and gas industry and the vast army of oil and gas adventurers whose ranks are perennially filled by planless recruits according to the unknown rules of accident. It fails to even touch oil and gas prospecting and producing under competitive conditions, but rather it creates a favorable climate for monopoly. The nation's needs and demands for vast quantities of oil and gas cannot be safely rested upon such principle, the basis for which was once tried and found inadequate.

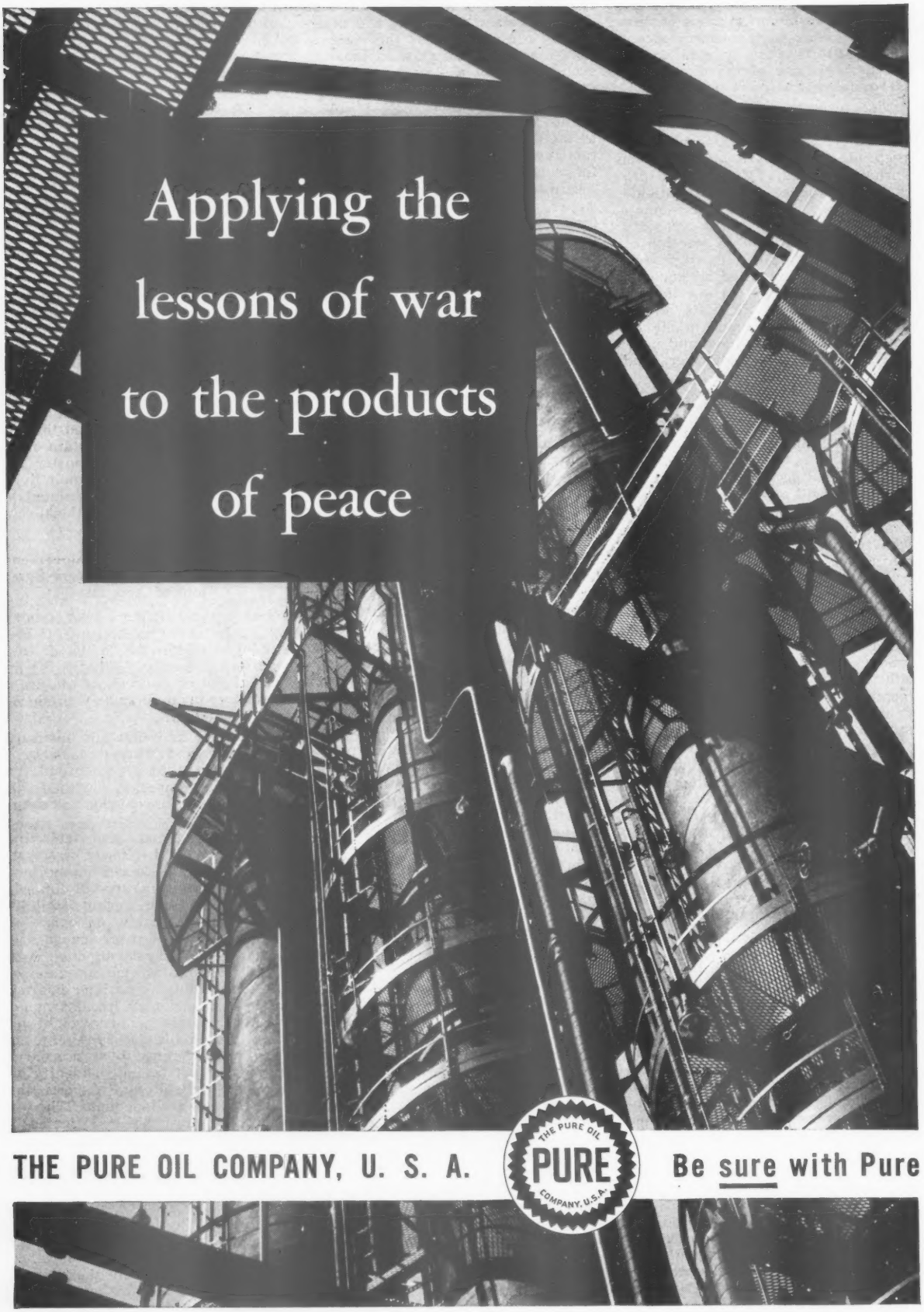
In any event, rates for interstate gas maintained at levels designed solely to recruit investors in interstate pipe lines and to furnish gas to the consumer at the cheapest price are of course not the just and reasonable rates required by the act. Interstate gas rates determined on such a policy are lacking in nationality. At least, it may be observed that the legitimate interest and welfare of the oil and gas producing industry and the multitudes who draw their living therefrom are admissible elements of any just and reasonable national rate-making policy.

4.—Certificates of Public Convenience and Necessity and Uniform System of Accounts

Has the certificate power granted by the Natural Gas Act to FPC been employed within the "ambit of their statutory authority?" What is the impact, direct or indirect, of the use of this power upon oil and gas producers and production?

Again we find that administrative expertness and discretion must, to some extent, fill up and provide the content encompassed within the words "public convenience and necessity."

Business judgment and determinations, presumably made by men trained and experienced in the business, concerning matters of financial soundness and engineering feasibility as well as good business risks, are not merely reviewed but are managed by means of the "key to effective regulation"—the uniform accounts device. The fact that the pipe liner has taken the risk and may lose his money apparently adds neither weight nor credibility to his decisions, entitling them to preference over a salaried expert. It must be independently determined by statutory experts that the reserves are adequate. The expenditures must be investigated to determine whether they are legitimate and honest. The commission, it is said, must somewhat oversee the drilling, producing, and operating practices from the pocketbook standpoint. Adequate depreciation and depletion must be forced upon an unwilling pipe liner. Money allowances must be determined by the commission and doled out to the pipe liner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with which to drill and conduct exploratory and development operations. The commission must determine whether the gas is produced in accordance with standard practices of conservation ascertained by an unannounced agency. On the other end of the line, likewise immunized by Congress from control and regulation, the commission has found that consumption may have to be restricted to the purposes and uses determined by it.

Oil and gas leases and producers having a natural-gas-utility status either because they engaged in interstate gas transmission business or because they have made, innocently or otherwise, a guilty interstate sale are thus subjected to the certificate and uniform accounts powers exercised by the commission. These certificate and uniform accounts powers have been implemented by the commission's regulations to such an extent that in large measure it has the business management of the oil and gas lease and the producer becomes a mere tools contractor.

The kind, use, amount, and volume of oil and gas production, operating practices, well spacing, conservation practices, definition by fields, oil and gas ratios, engineering control of reserves, processing, handling, local markets, and marketing regulations are matters within the traditional domain of state governments and regulatory bodies immunized by the Natural Gas Act. Congress, not by mere accident, sought to eliminate dual governmental control with its inevitable conflicts and frictions over such matters, either directly or indirectly. Immunization of production and gathering from federal control was deliberate and purposeful. Four years prior to the enactment of the Natural Gas Act and again 1 year almost to a day subsequent to its enactment, Congress, in lieu of entering into this field of regulation, deliberately synchronized interstate-commerce regulations with state laws and regulations governing such matters. As to "petroleum," "constituent parts of petroleum," and "petroleum products," national policy required that interstate-commerce regulation accommodate itself to state production regulation and restrictions governing volumes, uses, kinds, etc. This is obviously law for the regulated as well as the regulators.

From the producers' viewpoint it is inconceivable that an interstate-pipe-line purchaser of gas should be immune and insulated from the essential statutory obligations and regulatory duties inherent in his business as a gas purchaser. I refer to ratable-taking obligations and duties in respect to correlative rights in a single field, installations and extensions. Money for these purposes under the uniform accounts system is a matter of grace within the discretion and determination of the commission. Is it enough that the commission believes such expenditure unsound from the viewpoint of the investor or detrimental to the cheapest price to the consumer? Again here the matter of such expenditure ought to be viewed from the standpoint of the producing community and the obligations owed to that community by such purchaser. Who will build the compressor for gathering and saving waste gas—the producer who gets nothing out of it or the pipe-line purchaser who at least gets 6½ per cent on his investment?

It may be observed that the reported experience of the commission to date in respect to certificates has largely centered around the relief of shortages in existing consuming areas and to supply war demands. Undoubtedly the exploitation of the certificate power of the commission on a permanent basis is in the initial stages.

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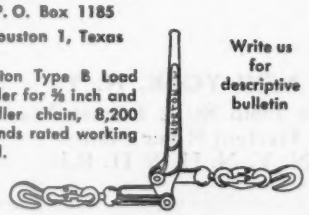
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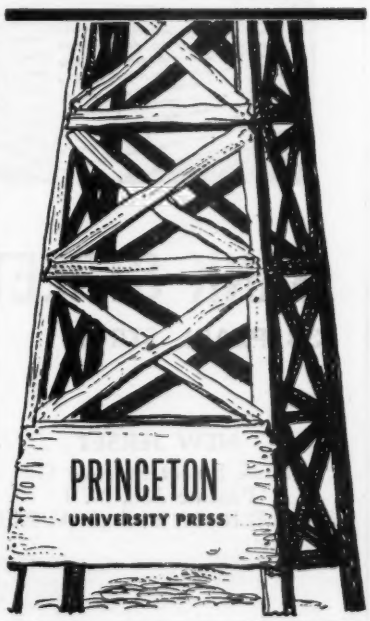

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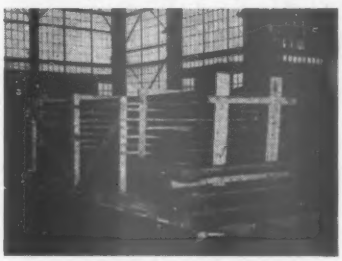

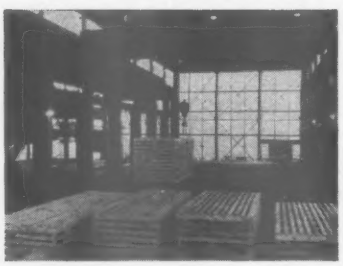

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Optimum Production Rate for Reserve Recoverable at Uniform Depletion Rates

*by Park J. Jones**

PART 22 OF A SERIES

RATES of production proportional to reserve are uniform rates of depletion. The rate of production decline is uniform and equal to the rate of depletion. The initial rate of production is numerically equal to a uniform rate of depletion. The optimum rate of production is the initial rate of production for which the rate of depletion is optimum. In terms of production decline, the optimum rate of production for the reserve recoverable at uniform rates of depletion is the initial rate of production for which the rate of production decline is optimum. Operating expenses usually increase as rates of production decline. So optimum initial rates of production are expressed in terms of average operating expenses that are equivalent to the increasing expenses which usually accompany declining rates of production. These considerations are illustrated graphically and by examples.

Present Value of Reserve

THE rate of production Q at any time n is defined by:

$$Q = Re^{-Rn} \qquad (1)$$

where R is a uniform rate of depletion in M.c.f.'s per M.c.f., or barrels per barrel, per year of reserve. The quantity e^{-Rn} is the reserve at any time n. When n equals zero, e^{-Rn} is one and the rate of production Q equals the rate of depletion R.

The present value of production P_Q is equal to the product of producing rate Q and the present worth factor e^{-Rn}, that is:

$$P_Q = Qe^{-in} = Re^{-(R+i)n} \qquad (2)$$

where i is the rate of interest.

The present value P_c of the production accumulated during n years is equal (see appendix to this article) to the sum of the present values of production which is given by:

$$P_c = \frac{R}{R+i}\left[1 - e^{-(R+i)n}\right] \qquad (3)$$

Equation 3 defines the present value of cumulative recovery at any time n. However, we are interested primarily in the present value of the entire reserve rather than in the portion of the reserve recoverable during n years. Suppose we continue producing indefinitely. As n becomes large, the value of the factor $e^{-(R+i)n}$ approaches zero. Therefore, the present value P cannot exceed the present value defined by:

$$P = \frac{R}{R+i} \qquad (4)$$

*Production consultant, Houston.

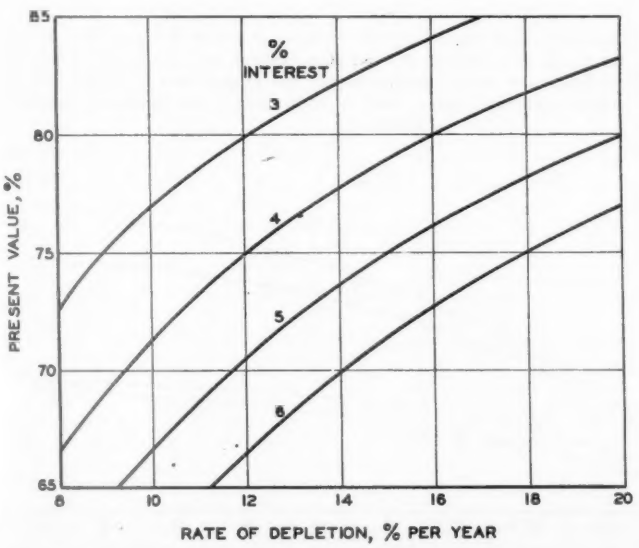

Fig. 22-1—Present value for uniform rates of depletion in per cent of the reserve recoverable at uniform rates of depletion; present value is before investment, taxes, royalty and operating expenses

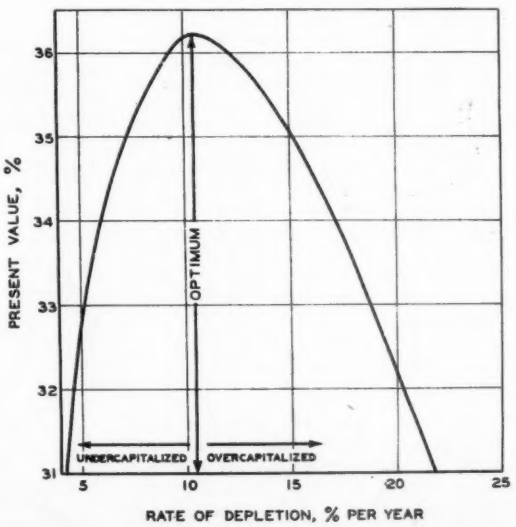

Fig. 22-2—Present value of the reserve recoverable at uniform rates of depletion; equivalent operating outgo is 40 per cent of gross production; the initial per-well annual producing capacity is equal to per-well investment; interest rate is 3 per cent

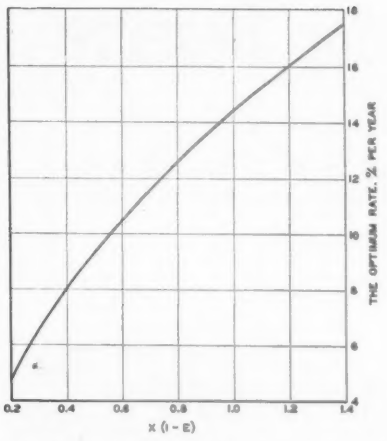

Fig. 22-3—The optimum initial rate of production vs. the product of equivalent operating income (1 — E) and the initial per-well annual producing capacity. X in M.c.f.'s/M.c.f., or barrels/barrel, invested per well; interest rate is 3 per cent

Equation 4 defines present value in M.c.f.'s per M.c.f., or barrels per barrel, of the reserve recoverable at uniform rates of depletion. For example, if the initial rate of production were 10 per cent per year, the present value would be 10/13 or 76.92 per cent of the reserve provided the rate of interest is 3 per cent. This present value is before investments, taxes, royalty and operating expenses. The curves in Fig. 22-1 are solutions of Equation 4. Present value in per cent of reserve is plotted against uniform annual rates of depletion for 3, 4, 5, and 6 per cent interest rates.

The Economic Balance

The operating outgo is equal to the sum of taxes, royalty, and operating expenses. Declining rates of production are usually accompanied by increasing operating expenses. But an increasing operating outgo may be replaced (see appendix), by an average operating outgo which is equivalent to increasing operating outgoes. Let E denote the equivalent operating outgo. Then (1 — E) is the income in M.c.f.'s per M.c.f., or barrels per barrel, of gross production. The present value P of a reserve after taxes, royalty and operating expenses is given by:

$$P = \frac{R}{R + i}(1 - E)$$

Let I equal per well investment including per well plant investment. Wells are commonly produced at capacity when the rate of production from reservoirs is declining. Denote the annual per well initial producing capacity by IX where X is a fraction, or multiple, of the per well investment I. If a reserve is to be produced at the rate R, the total number of wells W required is given by:

$$W = \frac{R}{IX}$$

The total investment in a reservoir, including plant investments, is IW and:

$$IW = \frac{R}{X}$$

Therefore, the present value of a reserve after operating outgo and investment is defined by:

$$P = \frac{R(1 - E)}{R + i} - \frac{R}{X} \qquad (5)$$

Present Value vs. Rate of Depletion

The curve in Fig. 22-2 is a particular solution of Equation 5. Present value in per cent of reserve is plotted against uniform rates of depletion. The curve is for the following conditions: initial per well annual producing capacity is equal to per well investment. The equivalent operating outgo is 40 per cent of gross production. Interest rate is 3 per cent.

The optimum initial rate of production, in this example, is about 10.4 per cent per year. The present value is a maximum at this particular rate. The present value corresponding to a faster, or slower, rate is less than the present value at the optimum rate. The region to the left of optimum represents undercapitalized conditions. The region to the right of optimum represents overcapitalized conditions, that is, too many wells or too much plant capacity.

Optimum Initial Rate of Production

The optimum initial rate of production R_o is defined by:*

$$R_o = [iX(1 - E)]^{1/2} - i \qquad (6)$$

The curve in Fig. 22-3 is a solution of Equation 6. The optimum initial rate of production in per cent per year is plotted against the product X(1 — E). The quantity (1 — E) is equivalent income per unit of gross

*Obtained by differentiating Equation 5 with respect to the rate of depletion and equating the result to zero.

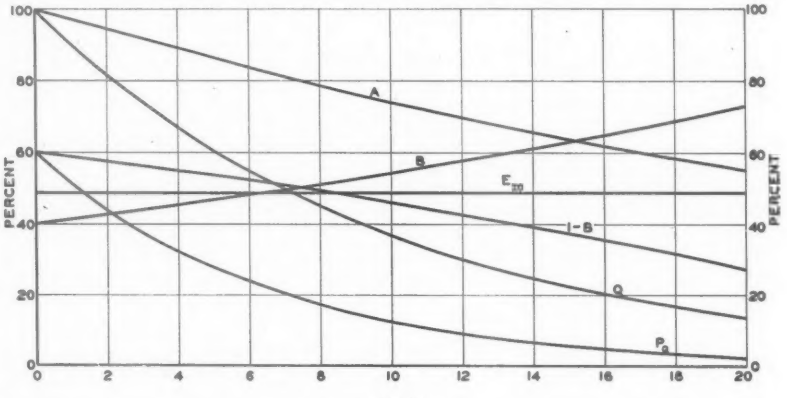

Fig. 22-4—Rate of production and operating outgo vs. time: Q is rate of production; A, present worth factor for 3 per cent interest; B, operating burden; (1 — B), operating income; P_Q, present value of production after operating outgo; rate of depletion is 10 per cent per year; E_{20} is the average operating outgo which is equivalent to the increasing operating burden B

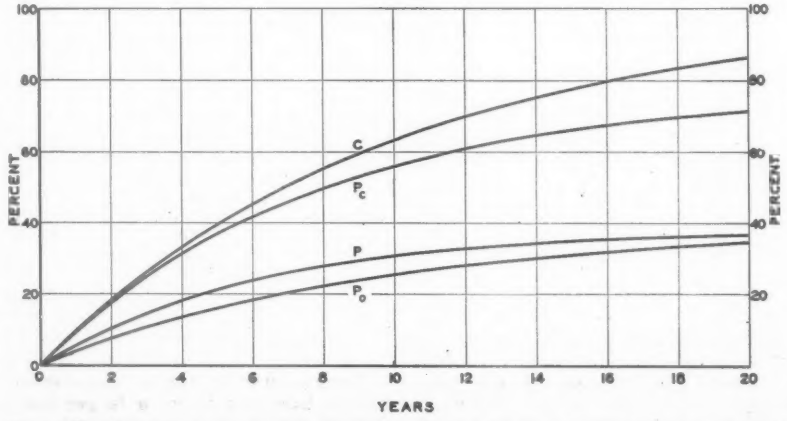

Fig. 22-5—Cumulative recovery and present value vs. time; C is cumulative recovery in per cent of initial reserve; P_C, present value of cumulative recovery; P_o, present value of operating outgo; P is present value of reserve after operating outgo but before investment

production. The symbol X represents per well investment including per well plant investment. Interest is 3 per cent.

Optimum for a Natural-Gas Reserve

A 400-billion natural-gas reserve is recoverable at uniform rates of depletion. Estimate the optimum initial rate of production for the following conditions: Per well initial producing capacity is 8 million cubic feet per day. Per well investment is 1.72 billion cubic feet. The equivalent operating outgo, that is, the sum of taxes, royalty and average operating expense is estimated at 40 per cent of gross production.

In this example ,the initial per well producing capacity is 8 (365) or 2.92 billion per year. The ratio X of per well initial producing capacity to per well investment is 2.92/1.72 or 1.7. The equivalent income (1 — E) is (1 — 0.4) or 0.6. The product X (1 — E) of investment and income is 0.6 (1.7) or 1.02. From Fig. 22-3, the optimum initial rate of production is 14.5 per cent or 58 billion cubic feet per year. The optimum number of wells is 20. The optimum investment is 20 (1.72) or 34.4 billion feet. The optimum investment is 34.4/400 or 8.6 per cent of the reserve producible at uniform rates of depletion. The optimum initial rate of production for the reserve producible at uniform rates of depletion is not necessarily the optimum rate of production for a reservoir if a portion of its initial reserve is recoverable before production starts declining.

Optimum for An Oil Reserve

A 40-million-barrel oil reserve is recoverable at uniform rates of depletion. Estimate the optimum initial rate of production for the following conditions: Per well initial producing capacity is 100 bbl. per day. Per well investment is 40,000 bbl. The equivalent operating outgo is estimated at 50 per cent of gross production.

In this example, the initial per well producing capacity is 36,500 bbl. per year. The ratio X of per well initial producing capacity to per well investment is 36,500/40,000 or 0.91. The equivalent income is (1 — 0.5) or 0.5. The product X (1 — E) is 0.91 (0.5) or 0.45. From Fig. 22-3, the optimum initial rate of production is 8.6 per cent or 3.44 million dollars per year or 9,400 bbl. per day. The optimum number of wells is 94. The optimum investment is 94 (40,000) or 3,760,000 bbl. or 9.4 per cent of the reserve producible at uniform rates of depletion. The optimum initial rate of production for the reserve producible at uniform rates of depletion is not necessarily the optimum rate of production for a reservoir if a portion of its initial reserve is recoverable before production starts declining.

Appendix to Article 22

The present value P_c of cumulative recovery at any time n is obtained by integrating:

$$P_c = R\int_0^n e^{-(R+i)n}\,dn$$

The effect of increasing operating expenses is illustrated, for a particular case, in Fig. 22-4. The rate of production for a 10 per cent per year uniform rate of depletion is given by the Q curve. The present worth factor e^{-in} is denoted by the "A" curve for a 3 per cent interest rate. The present value of production at any time n is AQ or $e^{-(R+i)n}$. The burden on gross production may be expressed in the form:

$$B = K_o e^{Kn} \qquad (7)$$

where K_o is the initial operating outgo and K is a constant. For example, the burden on gross production in Fig. 22-4 increases from 40 per cent, $K_o = 0.4$, up to 73 per cent at the end of 20 years. In this example, the value of K is 0.03 and the burden on gross production is defined by:

$$B = 0.4e^{0.03n}$$

The B curve in Fig. 22-4 is a solution of the foregoing expression. The (1 — B) curve shows the corresponding income after operating outgo per unit of production.

The present value of production is defined by:

$$P_o = AQ\,(1 - B) = e^{-(R+i)n} - K_o e^{-(R+i-K)n} \qquad (8)$$

The P_o curve in Fig. 22-4 is a solution of Equation 8. The constants in this particular example are as follows: $R = 0.1$; $i = 0.03$; $K_o = 0.4$ and $K = 0.03$. The value of n ranges from zero up to 20 years. At the end of 20 years the rate of income after operating outgo is about 2 per cent per year as compared to 60 per cent per year at zero time.

The cumulative recovery C at any time is defined by:

$$C = 1 - e^{-Rn}$$

The C curve in Fig. 22-5 shows cumulative recovery for a 10 per cent per year uniform rate of depletion. The present value P_c of cumulative recovery at any time n is defined by Equation 3. The P_c curve is a solution of Equation 3. The present value of an operating outgo P_o is given by:

$$P_o = \frac{K_o R}{R + i - K}\left[1 - e^{-(R+i-K)n}\right] \qquad (9)$$

The P_o curve in Fig. 22-5 is a solution of Equation 10 for a 10 per cent rate of depletion, 3 per cent interest and operating outgo ranging from 40 per cent up to 73 per cent in 20 years.

The difference between P_c and P_o is the present value of cumulative recovery after operating outgo. This difference is illustrated by the P curve in Fig. 22-5. This difference must equal the present value of cumulative recovery times the equivalent income, that is:

$$P_c\,(1 - E) = P_c - P_o$$

from which

$$E = \frac{P_o}{P_c}$$

Upon substituting values for P_o and P_c, we obtain:

$$E = \frac{K_o\,(R + i)}{R + i - K}\,\frac{e^{-(R+i-K)n} - 1}{e^{-(R+i-K)n} - e^{-Kn}} \qquad (10$$

Equation 10 defines a uniform operating outgo which is equivalent to the increasing operating outgo defined by Equation 7. The E_{20} line in Fig. 22-4 is a solution of Equation 10 for the first 20 years of the reserve. The equivalent operating outgo in this example is 48.57 per cent of gross production. The equivalent operating outgo increases with time. But it depends primarily on the operating outgo during the first third of the life of a reserve.

A. T. Remington, formerly landman for the Pure Oil Co. district office at Jackson, Miss., has been transferred to the Fort Worth office as assistant to **M. H. Plummer,** head of the land department.

John E. Asher, General Petroleum Corp., has been elected president of Oil Map Revision Association, composed of chief draftsmen of 16 leading oil companies in Los Angeles. **Ray E. Wendt,** of the California oil administrator's office, has been elected vice president. **Margaret Doyle,** Pacific Western Oil Corp., was named secretary, and **Jack L. Hall,** Ohio Oil Co., was elected treasurer.

J. R. Carringer has been designated vice president in charge of manufacturing of the Standard Oil Co. of New Jersey. **H. G. Burks, Jr.,** has been made general manager of the company's East Coast manufacturing operations.

George Dunlap, Dallas, who recently returned from service in the Navy, has been made assistant to **J. H. Pressley,** head of the land department, Sun Oil Co., Dallas office.

Lt. Comdr. W. C. Lane, USNR, returning to inactive duty, has been reelected president of California Commercial Co., Inc., subsidiary of Standard Oil Co. of California, with offices in New York. Lane served as officer-in-charge of the fuel and tanker central section, U. S. Naval Forces in Europe, and as deputy chief petroleum officer, Area Petroleum Service.

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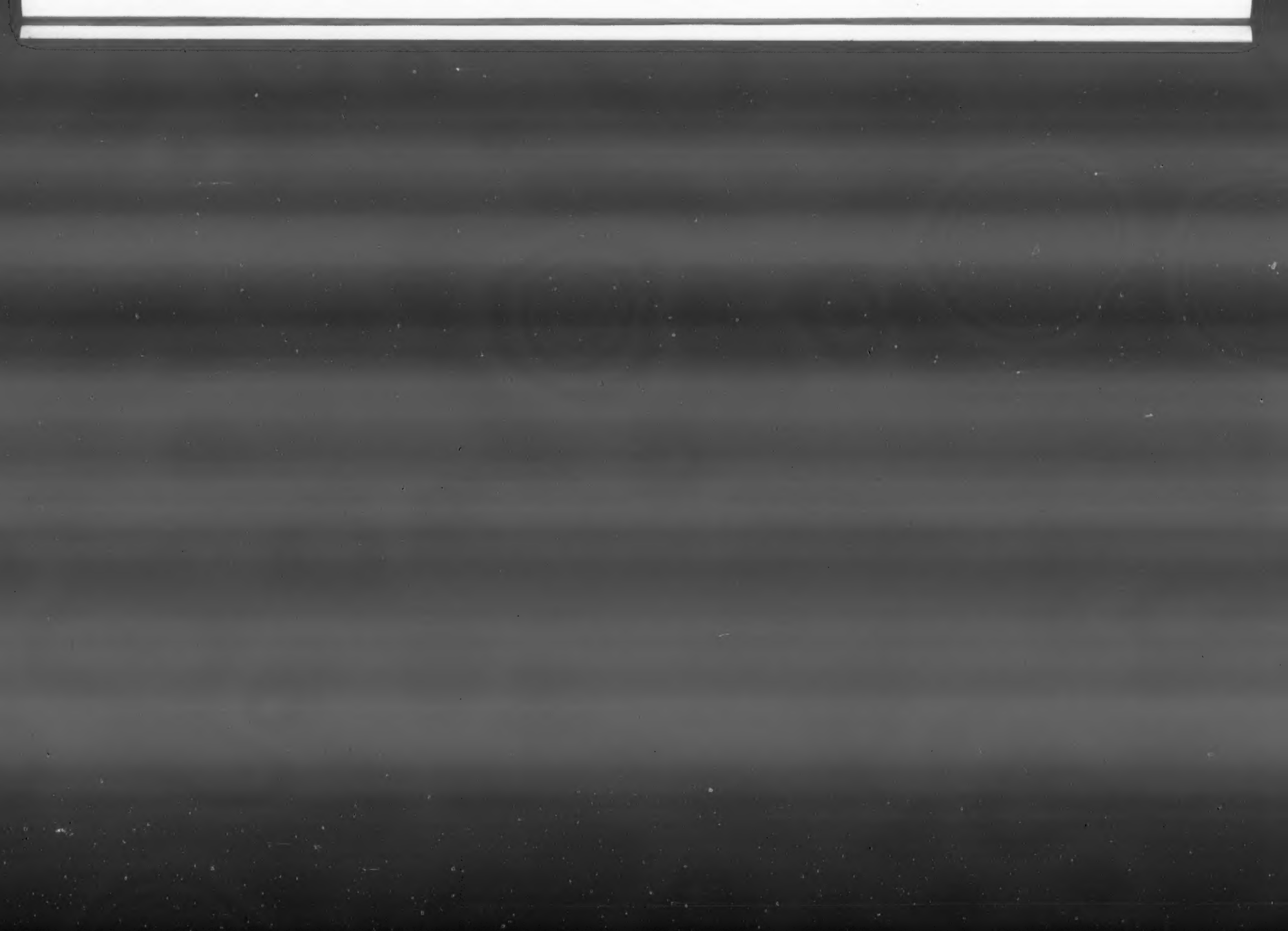

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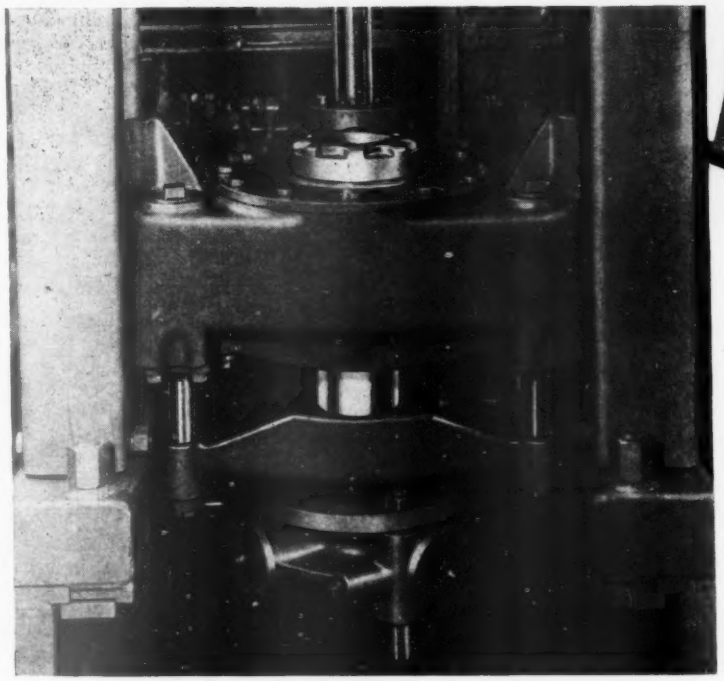

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PROGRESS IN METALS

by W. L. Nelson
Consulting Engineer

Separation of Stainless Steels by Spot Tests

THE excellent program for identifying stainless steels outlined on this page is that of H. W. Miller of Carpenter Steel Co. Various types or groups of stainless steels are indicated in Table 1. A testing scheme or program is indicated in a chart. The usefulness of being able quickly and easily to segregate these valuable steels is obvious. The following discussion is taken in large part from Miller's discussion in the May 1945 issue of Metals and Alloys.

Methods here outlined are useful to separate types that show marked differences in their chemical and physical properties. The tests are not intended to take the place of a chemical analysis where precise data are needed. In these spot tests, it is assumed that the operator has some technical knowledge of the alloys in question.

The first spot tests naturally only classify the unknown metal into broad divisions. Each subsequent test narrows down the classification until finally the X sample is completely segregated. In the accompanying chart, the auxiliary notations are readily understood. Thus, "Rc" denotes Rockwell hardness C; "Se" is, of course, the chemical symbol for selenium, and "S" for sulfur. The "F" in "420F" signifies free cutting.

In the accompanying chart, the letters in parentheses, a to d, refer to the various muriatic acid tests, mentioned under heading of "Identification Tests."

Scale must be cleaned from the samples by pickling or grinding and in making each spot test a fresh area should be prepared by grinding before applying the solution.

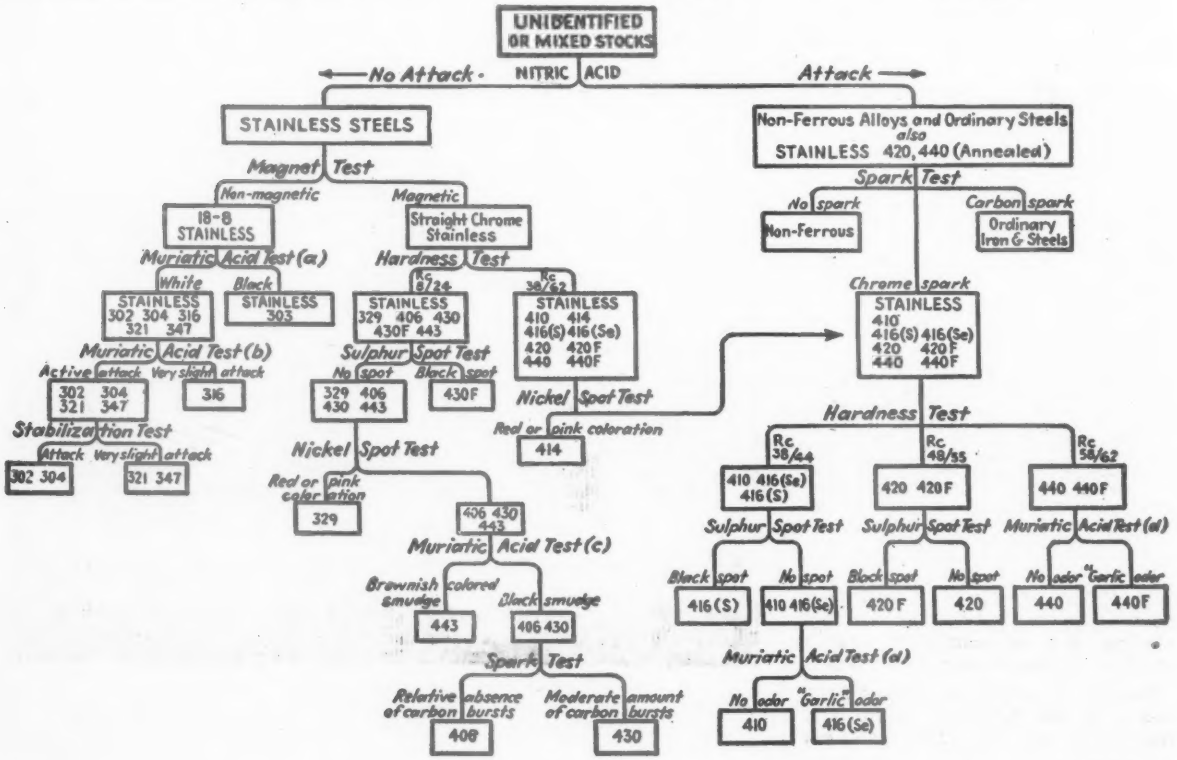
Identification Tests

Nitric acid test.—The solution is made by mixing one part of concentrated nitric acid and one part of water. A drop is placed on the specimen. Attack is denoted by a boiling action or gas evolution from the drop.

Magnet test. — Austenitic stainless steels (the 18-8 types) are nonmagnetic in the annealed condition, but

TABLE 1

Type—	Carbon	Chromium	Nickel	Other elements
302	Over 0.08/0.20	17.00/19.00	8.00/10.00	Mn 2.00 max.
303	0.20 max.	17.00/19.00	8.00/10.00	Mn 2.00 max.; S or Se 0.07 min.; Mo 0.60 max.
304	0.08 max.	18.00/20.00	8.00/10.00	Mn 2.00 max.
316	0.10 max.	16.00/18.00	10.00/14.00	Mn 2.00 max.; Mo 1.75/2.50
321	0.10 max.	17.00/19.00	8.00/11.00	Mn 2.00 max.; Ti 4 x carbon min.
329	0.20 max.	23.00/28.00	2.50/5.00	Mo 1.00/2.00
347	0.10 max.	17.00/19.00	9.00/12.00	Mn 2.00 max.; Cb 8 x carbon min.
406	0.15 max.	12.00/14.00	.....	Aluminum 3.50/4.50
410	0.15 max.	11.50/13.50	.....	
414	0.15 max.	11.50/13.50	2.50 max.	
416	0.15 max.	12.00/14.00	.....	S or SE 0.07 min.; Mo 0.60 max.
420	Over 0.15	12.00/14.00	.....	
420F	Over 0.15	12.00/14.00	.....	S or Se 0.07 min.; Mo 0.60 max.
430	0.12 max.	14.00/18.00	.....	
430F	0.12 max.	14.00/18.00	.....	S or Se 0.07 min.; Mo 0.60 max.
440	Over 0.12	16.00/18.00	.....	
440F	Over 0.12	16.00/18.00	.....	S or Se 0.07 min.; Mo 0.60 max.
443	0.20 max.	18.00/23.00	.....	Cu 0.90/1.25



become slightly magnetic when cold worked. The slight magnetism can easily be distinguished from the stronger magnetism of the straight chrome types.

Spark test.—A spark test is made to separate stainless Types 420 and 440 from nonferrous alloys and ordinary iron and steel, as nitric acid under certain conditions may attack annealed specimens of some stainless types. These stainless steels emit a short "chrome" spark.

Hardness test. — Specimens are heated to 1,850° F. and oil quenched. Various carbon-percentage ranges will be noted by different hardnesses as quenched. The nonhardening types will show low hardness as oil quenched from 1,850° F.

Muriatic acid tests.—Specimens are placed in a solution of muriatic acid (one part water, one part muriatic acid) at 180° to 190° F. a fresh solution should be used for each of the following tests:

(a) After 5 minutes immersion, Type 303 will be coated with a heavy black smudge.

(b) With 2 minutes, Type 316 shows a very slight attack as compared with the active attack and evolution of gas on Types 302, 304, 321, and 347.

(c) Immerse specimens for at least 15 minutes, Type 443 shows a brownish colored smudge.

(d) Immerse specimens in a separate container for 5 minutes, then remove from the solution. A pungent garlic-like odor will be detected on Types 416 (Se) and 440F. This characteristic odor of hydrogen selenide gas will not be present in pickling Types 410 and 440.

Sulfur spot test.—Three drops of sulfuric acid solution (one part sulfuric acid, three parts water) are placed on the specimen and allowed to react for 1 minute. One drop of a 5 per cent solution of lead acetate in water is then added to the drop and allowed to react for 15 seconds. The spot is then washed with water and examined. A positive test for sulfur (stainless Types 416 (S), 420F and 430F) is the presence of a black sulfide deposit.

Nickel spot test.—Three solutions are required for this test:

Solution 1—Mix 125 cc. of water, 100 cc. concentrated nitric acid, and 25 cc. of 85 per cent phosphoric acid.

Solution 2—One part water and one part muriatic acid.

Solution 3—Dissolve 1 g. of dimethylglyoxime in 60 cc. of glacial acetic acid. To this solution add another solution, prepared by dissolving 10 g. of ammonium acetate in 30 cc. of ammonium hydroxide.

Procedure—Place one drop of Solution 1 on the specimen. Allow it to react for 30 seconds and then add one drop of Solution 2. This mixture reacts for an additional 30 seconds and is then absorbed with white blotting or filter paper. One drop of Solution 3 is then placed on the moist spot of the paper. The formation of a red or pink coloration in the spot denotes nickel.

Stabilization test—Test specimens are heated to 1,250° F. for 2 hours, furnace cooled to 800° F., and then cooled to room temperature in air. The specimens are then placed in a cold solution of three parts nitric acid, one part hydrofluoric acid, and six parts water. Stainless Types 321 and 347 will show a very slight attack from the acid. Stainless 302 and 304 will have rough, granular surfaces.

D. A. Hulcy, president of Lone Star Gas Corp., was presented with an engraved silver tray by the board of directors and executive council of the Dallas County War Chest campaign, in appreciation of his work as War Chest president.

Lt. Col. Rex L. Smith, discharged from army service, has returned to Skelly Oil Co. as assistant manager of the pipe-line and crude-oil purchasing departments, with headquarters in Tulsa. Before joining the armed forces, in which he became commanding officer of military pipe-line service in the European theater, Smith was in Skelly's pipe-line department in El Dorado, Kans.

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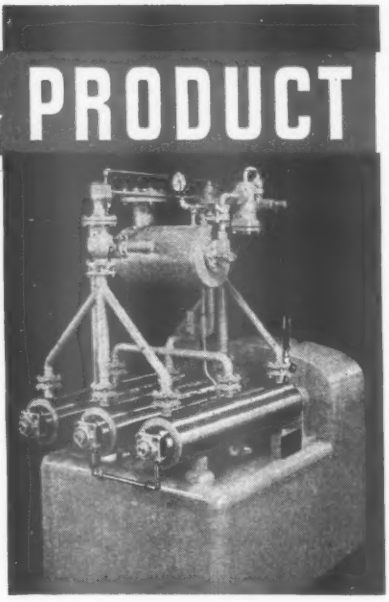
WHEN PIPING IS PART OF A PRODUCT



EQUIPMENT manufacturers who build products using piping find many advantages in Tube-Turn welding fittings. Here, for instance, is a Votator—one of many models of food processing equipment made by The Girdler Corporation. The piping system must be compact, leakproof, able to withstand pressure at high temperatures. Tube-Turn welding fittings meet every requirement.

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Engineering Fundamentals

No. 220

A FEATURE OF THE OIL AND GAS JOURNAL

Drip Accumulators in Casinghead-Gas Lines

DIFFERENCE between dry or residue gas and casinghead gas lies in the variation in their gasoline content. Residue gas is principally methane, some ethane, and only small amounts of other components which are easily liquefiable. Casinghead gas also contains propane, butanes, pentanes, hexanes and some heavier hydrocarbons. In casinghead gas all of these components, of course, "usually" are in the vapor state.

The above term "'usually' in the vapor state," as to the gasoline fractions in casinghead gas, is used advisedly because they will condense when their temperatures are sufficiently reduced. (Increased pressures also will liquefy them.) Casinghead-gas gathering lines are subjected to changes in temperature, both as between daytime and nighttime and with the seasons. In many areas, the temperature reductions are sufficient to condense appreciable volumes of raw gasoline. Water vapor present may condense.

Presence of condensed raw gasoline, or "drip," as it usually is called, in casinghead lines will do three undesirable things: (1) Reduce carrying capacity of the line (or, to put it another way, increase the frictional resistance to flow), (2) collect at orifice-meter settings and cause inaccurate metering, (3) endanger equipment within the gasoline plant. Crude oil also may get into the lines and cause these same troubles.

Liquids which may condense in or get into the lines are removed by accumulators or drips. There are many variations of this equipment, depending upon the gas volumes, pressures, quantities of liquid involved, and whether the location of the trouble is in smaller lines out in the field, or in a trunk line near the gasoline plant. There also are variations and designs which depend upon the materials available, local factors, individual preference, etc.

Drip Installed at Casinghead Meter

Fig. 1 is a meter setting and drip used by one prominent natural-gasoline manufacturer who operates plants in several states. To unload or "blow" the drip the valves are operated in this sequence: (1) Close "L," (2) open "V," (3) open "P." In the design of the drip, below "V" it is important for the inside pipe or "dip stick" to extend nearly to bottom, so the drip will be completely unloaded with each blowing.

To place the drip back into accumulating operation, the reverse procedure is used: (1) Close "P," (2) close "V," open "L." Reasons for the valve sequences are obvious, of course, for such a simple arrangement, and they are presented only to emphasize the operational, safety, and conservation considerations present. However, most drips are buried, so the handling always may not be clear unless the valves are individually identified, and those handling the operation properly informed.

Drip-Scrubber in Trunk Line

Fig. 2 is an installation in a trunk line in a low place or valley, from which the line passes up a hill and enters the gasoline plant. Considerable quantities of crude oil accumulated from the system at this spot, together with some condensed gasoline.

Large horizontal aboveground vessel serves as a scrubber and is connected to an underground drip. Note use of line to equalize the pressure between the two vessels so, in operation, the liquid will gravitate from scrubber to drip.

Valve positions in normal operation: "A," "B," "C," and "D" open. To blow: Close "A," "B," "C," and "D," then open "X," then open "Y." Use reverse order to put back into operation.

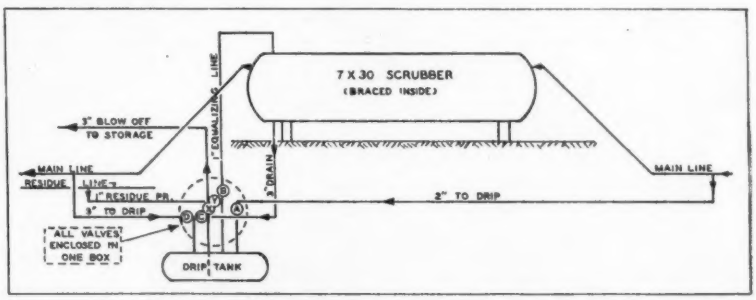

Fig. 2—"Drip-scrubber" on trunk line. Both crude oil and gasoline accumulate

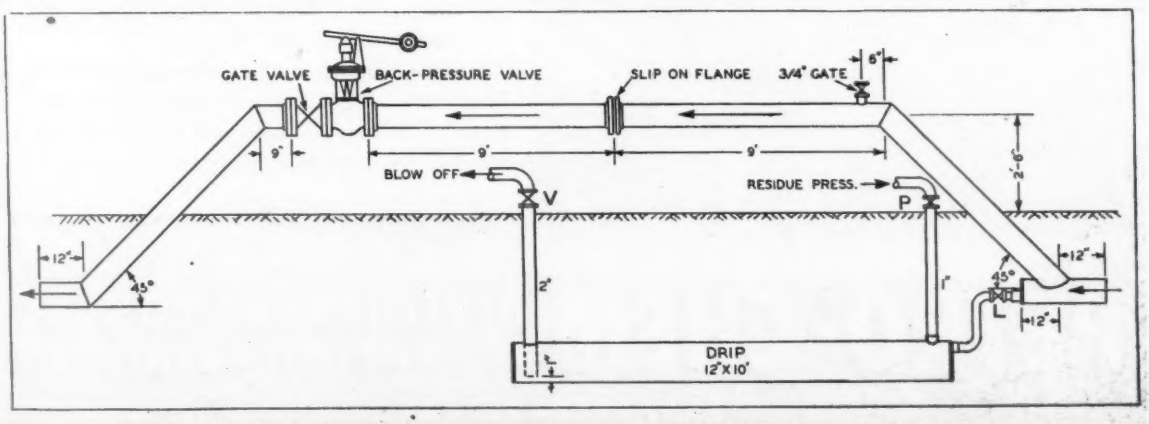

Fig. 1—Many casinghead-gas metering settings are equipped with "drips." This is one "standardized" design

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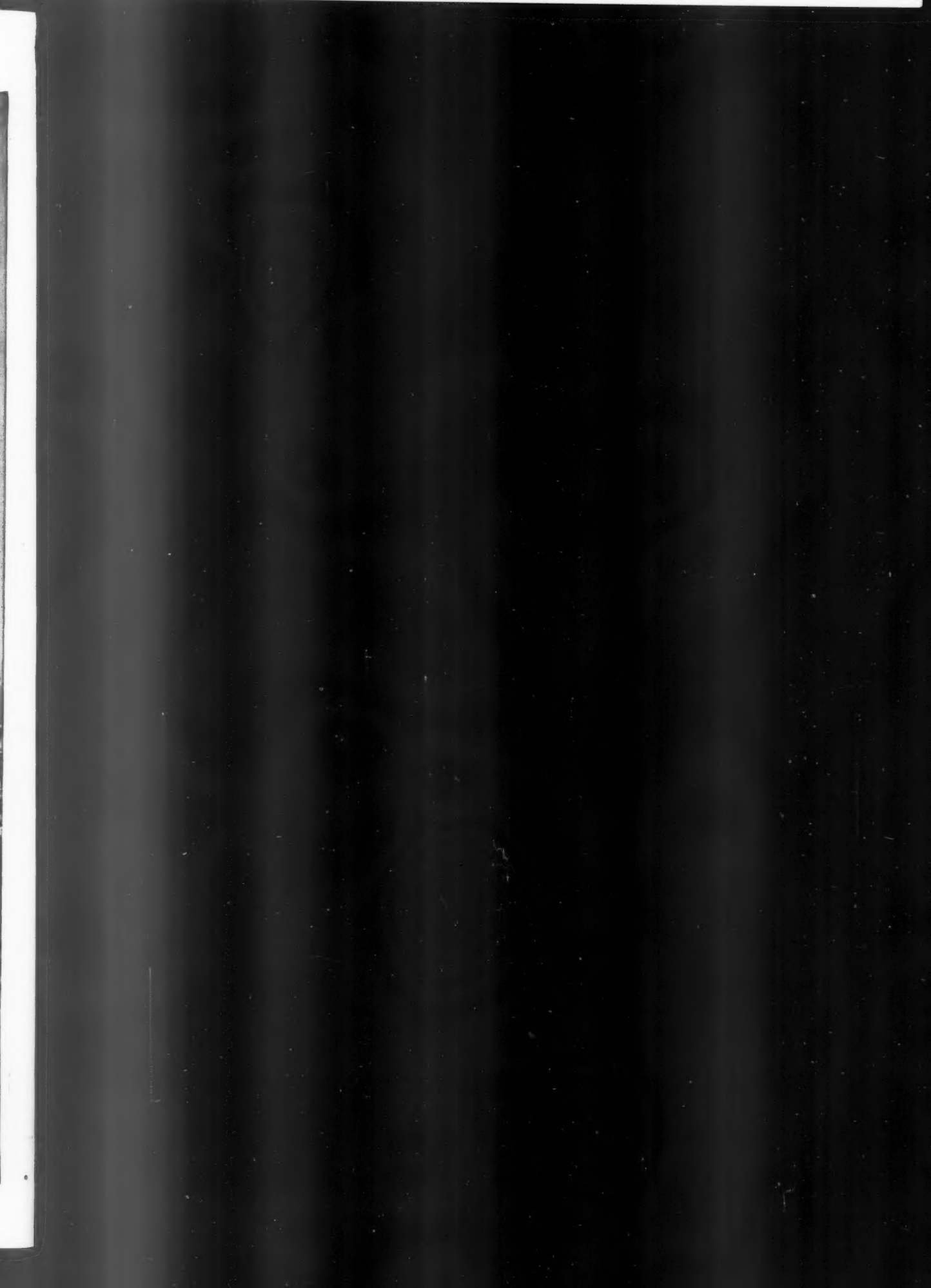
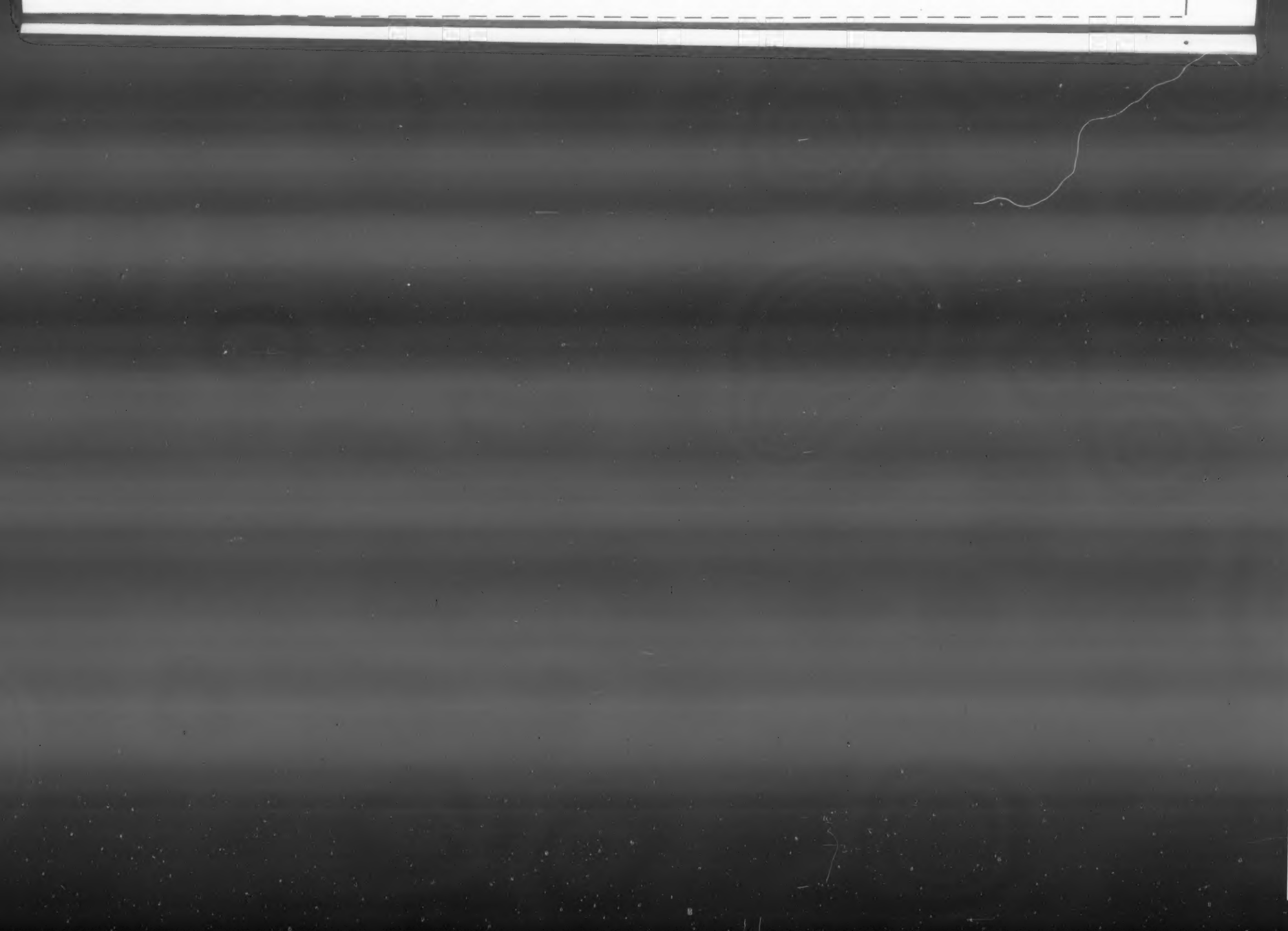
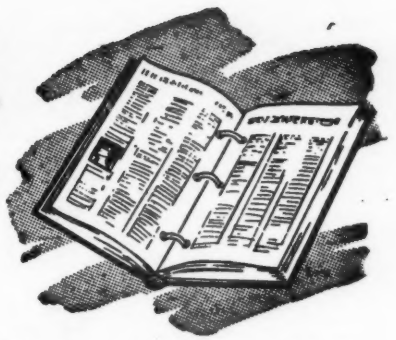




The Refiner's Notebook

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL



Heat Duty of Exchangers

EXCEPT for the complication of determining if or how much condensation is occurring, the computation of the amount of heat transferred in an exchanger is a direct application of the methods outlined in The Refiner's Notebooks Nos. 40 (May 5, 1945), 42 (May 19, 1945), and 43 (May 26, 1945) which pertain to specific heat and latent heat. It is also useful to remember that 1,000,000 B.t.u. per hour of heat saved is worth about 20 cents, or about $1,600 per year, if heat is worth an amount different from 20 cents per million B.t.u. (including inefficiency of firing), ratios may be employed.

Liquid to Liquid

Although the two inlet temperatures to an exchanger are known it is necessary to select one of the two outlet temperatures. For the most economical operation, the approaches shown in Notebook No. 71 (December 8, 1945) should be used, but in many instances other factors such as (1) safe storage temperature, (2) too small an existing exchanger or a reluctance to buy a large exchanger, or (3) a temperature that is fixed by the process such as the temperature that crude oil must attain before entering a desalter, may require the use of an outlet temperature different from the most economical one. Steps in the computation are:

1. Note the two incoming temperatures.
2. Decide on one of the outlet temperatures by considerations similar to those indicated above.
3. Compute the heat duty.
4. Compute the fourth or other outlet temperature.

Example 1.—Step 1—Mixed-base crude oil (40° A.P.I.—50,000 lb. per hour) at 190° F. is to be heated with kerosene (44 A.P.I.—6,000 lb.) available at 430° F.

Step 2—The crude oil should not be heated to more than 210° F. before entering a desalter. Refer to Fig. 1.

Step 3—The heat transferred is:

$$50{,}000\ (210 - 190)\ 0.54 = 540{,}000 \text{ B.t.u./hr.}$$

The 0.54 was taken from Notebook No. 40 (May 5, 1945), page 121.

Step 4—By estimating the average kerosene temperature as 350° F. which shows a specific heat of 0.64 (Notebook No. 40), the kerosene outlet temperature is:

$$430 - \frac{540{,}000}{6{,}000 \times 0.64} = 289° \text{ F.}$$

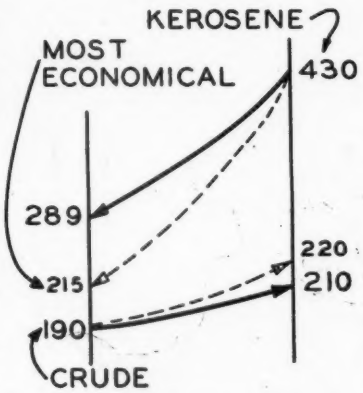


Fig. 1—Exchanger conditions for Example 1

If the estimated specific was badly wrong, another trial must be made.

If the crude-oil temperature had not been confined to 210° F. in Step 2, the most economical approach (5 years depreciation) according to Notebook No. 71 (December 8, 1945) would have been about 25° F., which means that the kerosene would have been cooled to 190 + 25 or 215° F. rather than the 289° F. found here.

The amount of vaporization that occurs in a condenser can be computed by means of the flash-vaporization curve of the vapor that is cooled. These curves are discussed in Notebooks Nos. 34 (May 17, 1945) and 37 (April 14, 1945) and they may be applied to any situation in which equilibrium is established be it vaporization or condensation. Condensers usually operate at a pressure and hence the atmospheric-pressure curves of Notebooks Nos. 34 and 37 should be corrected to the new pressure by means of the vapor-pressure chart of Notebook No. 38 (April 21, 1945), page 141.

Example 2.—A gasoline and its condensation curves are shown in Fig. 2. The A.F.I. mid per cent curve (Notebook No. 26, January 13, 1945, p. 91) is not necessary but is useful in estimating the gravities of condensates or vapors.

If the outlet temperature of the condensing material can be fixed or assigned, the heat duty can be computed directly. Thus, if the outlet temperature is 250° F. (Fig. 2) the amount of condensation is 75 per cent (or 25 per cent vaporized on the 11-psig. curve). The gravity of the remaining vapor will be about 68 (see gravity mid per cent) and that of the condensate 52 (see 62.5 per cent on gravity curve). Thus, the heat recovered from 4,000 gal. per hour of gasoline entering at 355° F. and being cooled to 250° F. will be:

	B.t.u./hr.
$0.75 \times 4{,}000 \times 6.42 \times 123$	2,360,000
$4{,}000 \times 6.32\ (305 - 250)\ 0.55$	762,000
Total	3,122,000

in which 6.42 and 6.31 are the gallon weights and 52° and 55° A.P.I. materials, 123 is the latent heat at 305° F. (Notebook No. 43) of condensate, and 0.55 is the average of the liquid and vapor specific heats of the whole gasoline at 277° F. (Notebooks Nos. 40 and 42).

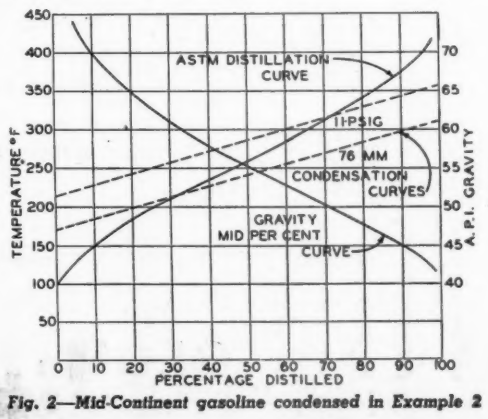


Fig. 2—Mid-Continent gasoline condensed in Example 2

No. 78 in a series by W. L. Nelson, professor of petroleum refinery engineering, University of Tulsa

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Natural Gas

FPC Approves Lower Rates Of Two Gas Companies

WASHINGTON. — New schedules reducing wholesale gas rates of the Colorado-Wyoming Gas Co. and of the Canadian River Gas Co. about 30 per cent have been approved by the Federal Power Commission following a 3-year court contest of the reduction orders.

Colorado-Wyoming will be required to refund to three resale companies, Cheyenne Light, Fuel & Power Co., Greeley Gas & Fuel Co., and Public Service Co. of Colorado a total of $685,078, representing the difference between reduced rates ordered by FPC in June 1942, and rates charged by Colorado-Wyoming to December 1945. Colorado-Wyoming had impounded $75,250 in court. During the same period, Colorado-Wyoming benefited by an FPC-ordered reduction of $791,847 in the cost of gas it purchased from Colorado Interstate Gas Co. Both sums will be used in the Colorado-Wyoming refunds.

Canadian will refund approximately $40,000 collected from the Clayton Co. of Clayton, N. M., from May 1942 to December 1945. The United States Supreme Court last April upheld the FPC order dealing with Canadian, and in part in respect to Colorado-Wyoming.

Lake Charles Natural-Gas System for Sale or Lease

NEW ORLEANS. — The Lake Charles natural-gas system, now operated by Union Sulphur Co., is for sale or lease, it is announced by Reconstruction Finance Corp. Substantial additional business is said to be in prospect. Major industrial plants in the Lake Charles area are supplied by the system, which has approximately 97 miles of pipe line.

The steel pipe, high-pressure welded and from 6 to 20 in. in diameter, is installed on leased rights-of-way through Calcasieu and Jefferson Davis parishes into Cameron and Arcadia parishes.

The line can withstand an inlet pressure of approximately 700 lb. per sq. in. and has a maximum transmission capacity of about 127.000,000 cu. ft. of natural gas a day. The gas is obtained from several different suppliers under unusually favorable contracts, several of which run beyond 1965. Undeveloped gas reserves are within easy connection distance of the Lake Charles system. Engineers report that the additional loads in prospect can be supplied without major capital expenditures.

Lundstrum Heads Research Department of United Gas

SHREVEPORT. — Allan W. Lundstrum, recently released as deputy director of the War Production Board's gas division, in Washington, has been chosen to head the new research department created by United Gas Corp. Lundstrum, who graduated from the University of Washington in 1923, has been active in the work of the American Gas Association.

W. F. Hartwig, who was assistant manager of the Shreveport district of the United Gas companies, has been advanced to assistant general superintendent of production for Union Producing Co.

John C. Flanagan, for 15 years assistant to the president of United Gas Corp. at Shreveport, has been elected vice president and assistant general manager of the operating division, with headquarters in Houston. H. P. Carroll, operating manager for 6 years, has been given jurisdiction over all United Gas operating properties, including the Houston division. He formerly supervised only those outside Houston. E. L. Henderson, formerly chief engineer, has been promoted to assistant operating manager. He is succeeded as chief engineer by A. D. Simpson, Jr., formerly an assistant chief engineer.

W. B. Head, Jr., since 1942 assistant manager of the Houston division of United Gas, has been named manager, succeeding K. L. Simons, who retired. Head is succeeded by James A. Wilson, formerly division manager at Monroe, La.

N. C. McGowen, president of United Gas Corp., said these and other changes were part of a reorganization program "in anticipation of an unprecedented demand for natural gas in the postwar period."

Indiana's Industrial Sales Put Under State Control

INDIANAPOLIS. — Regulation by the state of direct industrial sales of natural gas has been authorized by the Indiana Public Service Commission in a decision viewed as holding considerable importance to the industry. The opinion was handed down in the case of Panhandle Eastern Pipe Line Co., which sells gas to Anchor-Hocking Glass Corp. The commission has ordered Panhandle to file tariffs covering rates, regulations on its direct industrial sales, annual reports, and related information.

Texas Conferences Seek Reduction of Gas Waste

AUSTIN.—Correction of gas wastage disclosed in a recent report of an industry engineering committee will be discussed by Texas oil operators in a series of meetings to be held throughout the state by the Texas Railroad Commission.

Olin Culberson, commission chairman, said operators will be urged to eliminate voluntarily waste of casinghead gas. The engineering committee estimated that 1,500,000,000 cu. ft. is destroyed daily, in addition to quantities usefully employed.

The conferences will be held at Corpus Christi, for Southwest Texas; at Houston for District 3; at Midland, for West Texas; at Fort Worth for North Texas.

Natural Gasoline

Gasoline Production Corp. To Install Cycling Plant

AUSTIN.—The Gasoline Production Corp. was granted permission to operate a cycling plant to process gas from the West Tuleta, Ray, and Mineral fields, in the recent order of the oil and gas division of the Texas Railroad Commission.

The corporation was authorized to produce not more than 25 per cent of the daily open-flow potential of gas wells producing from the Slick horizon at 7,200 ft. and Robinson horizon at 7,600 ft. in the West Tuleta field; Slick at 7,250 and Luling at 7,450 ft. in the Ray field, and Slick at 7,100 and Luling at 7,250 in the Mineral field. The order permits sale of 4,000,000,000 cu. ft. of residue gas annually from the West Tuleta field, and 1,000,000,000 cu. ft. each from the Mineral and Ray fields.

Gas remaining after sale is to be injected into the Slick sand if produced from the Robinson sand, the commission specified. Gas from the Slick and Luling horizons will be returned to the same horizon less the amount sold and 2 per cent allowed as flash vapors. Provisions of the order relating to sale of the gas remain in effect only until reservoir pressures have decreased 500 psi. below initial pressures for the first quarter of 1946.

REFINING

Gulf Coast Gasoline Stocks Now Near Prewar Level

HOUSTON.—Stocks of all grades of gasoline and naphthas at plants in the Gulf Coast Refiners Association increased during the last half of December by 357,601 bbl. Stocks now stand at 2,072,400 bbl., approximating the normal prewar inventory position in 1941. A year ago total gasoline stocks were 1,617,614 bbl. Automotive gasoline stocks alone were 999,312 bbl., an increase for the 2 weeks of 149,515 bbl. Aviation gasoline stocks January 1 stood at 442,225 bbl. down 20,968 from December 15. Kerosene stocks were 272,962 bbl., up 19,261 and diesel stocks totaled 115,953 bbl. down 17,061. Crude runs to stills for the 10 independent refineries were 95,640 bbl. daily, 74.1 per cent of rated capacity.

Crown Central Grants Wage Increase of 18 Per Cent

HOUSTON.—Crown Central Petroleum Corp. has signed a contract with Oil Workers International Union under which employes will receive a wage increase of 18 per cent, with shift differentials of 5 and 6 cents an hour.

The contract provides for an increase of 9 per cent on all wages paid between August 27, 1945, and the last day of the old scale. About 350 employes of the refinery are in the bargaining unit.

United Plans Conversion of Natural Gas Into Gasoline

SHREVEPORT.—United Gas Corp., with principal offices in Shreveport, has applied to Securities and Exchange Commission for approval of a financing plan looking to construction of a plant near Brownsville, Tex., for manufacture of motor fuel from natural gas. United proposes to acquire 100 units of 6 per cent promissory notes due 1960 and $1 par value common stock of Cathage Hydrocol, Inc., New York, for $1,007,500. Each unit would consist of a $10,000 note and 75 shares of the stock.

United said that Hydrocol had developed a process converting natural gas into gasoline which, in the opinion of engineers, "can possibly result in an important new and expanding market for natural gas when the process is further studied and developed on a commercial basis."

United would benefit from the development through its ownership of all the outstanding capital stock of United Gas Pipe Line Co., which buys and sells natural gas, and also owns all the outstanding capital stock of Union Producing Co., owner of gas reserves in Louisiana, Texas, and other southwestern states.

Hydrocol proposes to build the Brownsville plant at a cost of approximately $14,000,000, the application disclosed. A loan from Reconstruction Finance Corp. will finance about half of the cost. The rest will be secured through sale of units of stock.

Texas Plant Is Offered For Sale by Government

WASHINGTON.—Buyers for a plant near Etter, Tex., operated during the war by Shell Chemical Co. for the manufacture of anhydrous ammonia and an additive for high-octane gasoline, are sought by the Government. Persons interested in buying or leasing the property should address the War Assets Corp., a Reconstruction Finance Corp. subsidiary, before January 31.

Army-Navy Board to Handle Aviation-Gasoline Claims

WASHINGTON.—Claims for losses under the aviation gasoline reimbursement plan will be passed on by the Army-Navy Petroleum Board instead of the Petroleum Administration for War after January 31, according to Ralph K. Davies, deputy PAW administrator. Although it is believed all claims have been received, Davies said notice of intention to file a claim should be submitted to PAW before January 31 and the claim itself filed with the petroleum board before May 1.

Pay Boosts May Increase Worries of Small Plants

WASHINGTON.—Settlements reached by major refiners with their union employes on the basis of the 18 per cent wage increase recommended by the Government's fact-finding board are seen as likely to increase the worries of small independent plants. The board received

testimony that small nonintegrated companies might be forced out of business by an over-all wage policy based on financial strength of large integrated organizations.

Destruction of small companies in this manner, it was argued, would be a step in development of alleged monopolistic tendencies of integrated companies. This contention is said to have been ignored by the oil panel, on the ground that it should study profits as a means of raising wages.

Between January 1941 and July 1945 straight-time average hourly earnings in establishments reporting to the bureau of statistics increased 21.6 per cent. The figures, according to panel, were derived from information on earnings in identical occupations in each establishment or facility.

The percentage change in earnings in each establishment was first computed, with the earnings in each occupation for both January 1941 and July 1945, weighted by July 1945 employment to eliminate the influence of changes in the relative importance of the various occupations over the period.

PAW Suggestion for Higher Prices to Be Studied

WASHINGTON. — The recommendation of Petroleum Administration for War that fuel-oil prices be raised in the Middle West and Gulf Coast areas, with additional increases on kerosene and other burning oils in the East, is to be taken under immediate consideration by federal pricing officials, with a view of stimulating production of fuel oils and reducing the output of gasoline. The recommendation was presented by Harold L. Ickes, petroleum administrator, on behalf of PAW and a holdover industry committee which met here to study the fuel-oil situation.

Specifically the Office of Price Administration was urged:

1. To make applicable to sales in District 3 (Gulf Coast) the price increases recently granted by OPA on kerosene and distillate oil from District 3 when sold only in District 1 (East Coast).

2. To increase the present ceiling price now applicable to kerosene and distillate heating oil in District 2 (Middle West) 0.5 cent a gallon.

3. To increase the ceiling price applicable on heating oil in Districts 1 and 3 by 0.3 cent a gallon.

The prospective stringency in residual fuel oil is the result in part, of unexpected demand for 70,000 bbl. a day by the Navy for the current quarter to move troops from various theaters back to the United States.

The Navy has already succeeded in getting West Coast refineries to provide 28,000 bbl. of residual oil a day and expects to cut down on the offtake from the Gulf and East Coast.

Hitherto, OPA has considered requests for increases to correct out-of-balance refinery operations from industry committees alone. Now, if Ickes presses his case, requests for price increase would go to the Office of Economic Stabilization and the director of War Mobilization and Reconversion for settlement, if OPA refused to act. The White House would be the ultimate referee.

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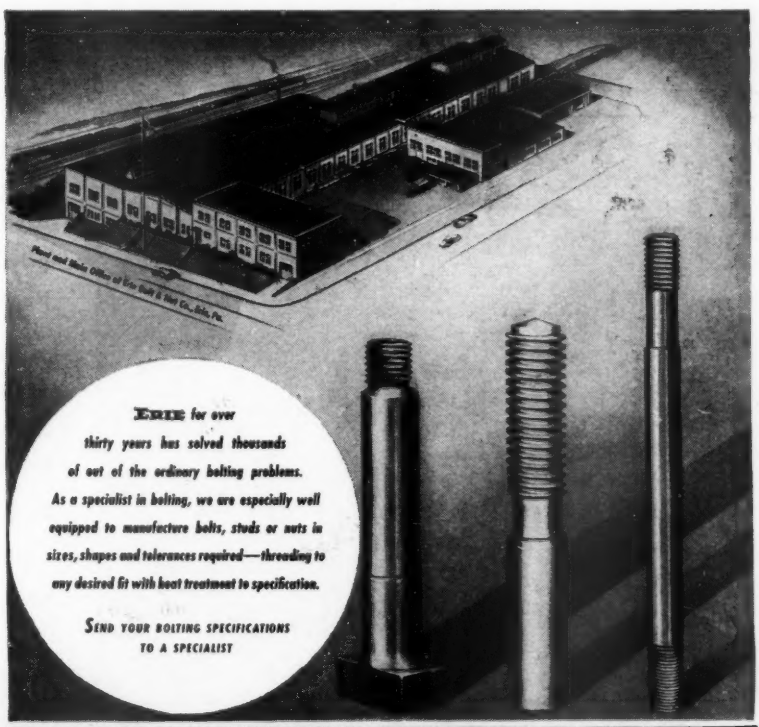
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Gate Station, TULSA, OKLAHOMA

PIPE LINES

Atlantic Employes Reject C.I.O. Union, 175 to 110

FORT WORTH. — Operating and maintenance employes of Atlantic Pipe Line Co., by a vote of 175 to 110, rejected representation by the Oil Workers International Union, C.I.O., in a recent mail election conducted under the direction of the National Labor Relations Board, Sixteenth Region. Votes were tabulated in the board's Fort Worth office. No other union was named on the ballot.

Sinclair Refining Seeks Removal of Texas Line

AUSTIN. — Application of Sinclair Refining Co. to remove 57 miles of pipe line extending from the Martha field, Liberty County, to the Smith's Bluff refinery of Pure Oil Co., near Nederland, will be heard by the oil and gas division of the Texas Railroad Commission February 7.

In its petition, Sinclair said Pure Oil, only user of the 8-in. line for the last 10 years, now sells oil produced in the Powell and Mexia fields to purchasers who do not require the line. Flow through the line has not exceeded 400 bbl. daily for several years, Sinclair added.

SPA Disregards Engineers Big-Inch Recommendations

WASHINGTON. — Recommendations contained in the Ford, Bacon & Davis engineering survey of the big-inch and little big-inch pipe lines apparently were disregarded when it reached the Surplus Property Administration.

The survey, conducted by the New York engineering firm for the Reconstruction Finance Corp. at a cost of $45,000, proposed that the line be converted to natural-gas use, with the Government bearing most of the risk in the early stages of operation.

SPA presented a separate report, written under the supervision of Slaten Jenner, an economist. RFC officials said recommendations in the Jenner report are diametrically opposed to those offered by Ford, Bacon & Davis. This is said to have caused some annoyance among RFC officials.

RFC already has opened oral negotiations with certain bidders for the lines and will be forced to develop a new method of dealing in view of the opposing recommendations, the officials said. RFC appears hesitant to present its own version of the proposals to Congress because of the political considerations involved.

Work Started on Line From Fort Stockton Field

HOUSTON. — Construction work has been started by Texas-New Mexico Pipe Line Co. on 34 miles of 6-in. line to serve the Fort Stockton oil field, in Pecos County. It leaves the company's main line at the Abell field station, in the north central part of that county. Fredell Construction Co. has the contract.

Examiner Upholds Union In Continental Co. Case

. WASHINGTON.—Continental Pipe Line Co., engaged in unfair labor practices in its McAllen, Tex., district,

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ECONOMY: Save approximately one-half labor and gas costs.
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according to the findings of a National Labor Relations Board trial examiner.

After a hearing held at Rio Grande City, C. W. Whittemore, examiner, upheld charges of the International Union of Operating Engineers, Local 550, A.F.L., that Continental had discharged two employes because of their union activities and that H. E. Greenwell, superintendent, had publicly warned employes at union meetings not to engage in union activities on threat of discharge.

Army's 900-Mile Pipe Line In Burma Sold as Scrap

NEW DELHI.—The 900-mile U. S. Army pipe line across Burma into China has been sold to the Indian Traders' Corp. as an estimated 17,500 tons of scrap. The system reached from Assam, India, to Wanting, China, and included 35 pumping stations.

The sale price was disclosed officially as 350,000 rupees (approximately $105,000). The line operated until the end of the war. A new speedup in liquidation of the American military establishment in India was disclosed with the announcement that cargo shipments out of Calcutta for the United States and China were scheduled to be completed on or about February 28.

Kaw Pipe Line Co. Now Spots Leaks From Air

Kaw Pipe Line Co., with headquarters in Tulsa, is now spotting leaks from the air instead of by the old laborious method of inspection by line walkers.

Eight men formerly spent their full working time traversing the main line between Logan and Lyons, Kans. Now Fred A. Thompson, flying a Cub cruiser plane, covers the entire 1,000 miles of main and feeder lines in a maximum of 3 days.

Three times a month Thompson takes off from the Hays, Kans., airport with fuel for 5 hours. He flies at 100 to a 1,000-ft. altitude depending upon visbility and the position of the sun.

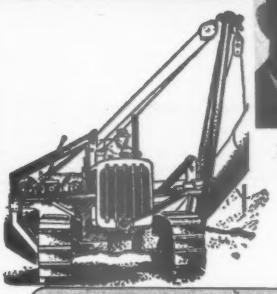
Leaks are easy to spot from the air in dry weather, Thompson says, but after heavy rains he is sometimes fooled by pools of water. In such cases, he usually lands for an inspection. Leaks are marked on a map.

The company, owned jointly by The Texas Co., Cities Service Oil Co., and Phillips Petroleum Co., finds the airplane method far superior to the former ground method because there was not enough time to cover the whole intricate feeder network connecting with the main line.

Thompson, who started flying in 1939 at Muskogee, Okla., taught flying during the war for the Army at Fayetteville, Ark., and for the Navy at Jacksonville, Tex.

PIPELINE "Know-how"

F. A. Smith
Partner



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THE REED "BR" *Wire Line* CORE DRILL

The Reed "BR" is provided with a protrusion regulator spring which regulates the load placed upon the core cutter head. This spring permits the retraction of the core cutter head within the drilling bit.

In soft formations the core cutter head cores ahead of the drilling bit and, when encountering hard streaks, retracts within the drilling bit to obtain a high percentage of uncontaminated core.

When coring hard formations the retraction of the core cutter head within the drilling bit protects the core barrel assembly and cutter head from excessive weight and permits full drilling efficiency.

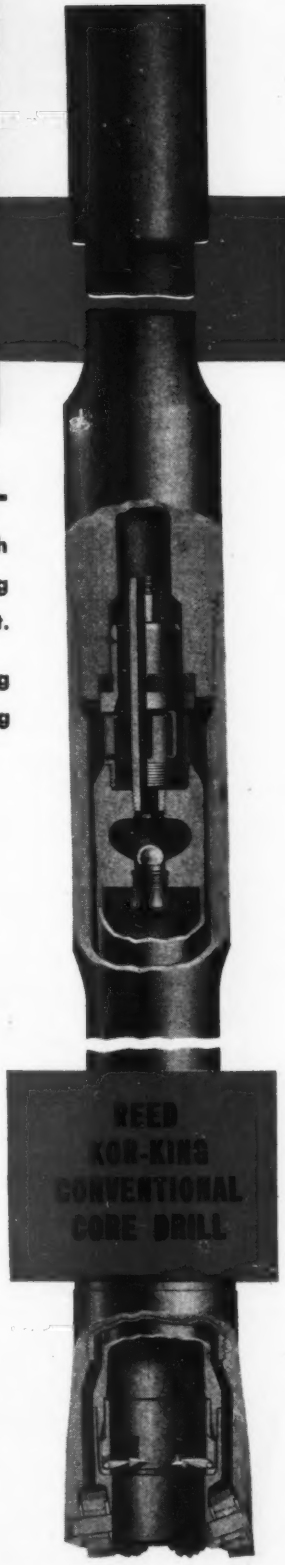
THE REED *Kor-King* CORE DRILL

The Reed Kor-King is a conventional type core drill and is furnished with a Neoprene (oil proof) bearing.

This slush lubricated bearing permits the use of a full floating inner barrel and assures longer, cleaner cores.

In ordinary use many cores may be taken using the same bearing; however, when it becomes worn, a new one may be quickly installed on the derrick floor.

This feature, together with simplicity of design and strength of construction, will keep your core barrel out of the repair shop and give you consistently dependable performance.



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HOUSTON 1, TEXAS

STATISTICS and

WEEKLY WELL COMPLETIONS . . . WEEK ENDED JANUARY 19, 1946

	Total of all wells					Cum. to date		Wildcat completions and discoveries					Cumulative total, 1946				
	Comp.	Oil	Gas	Dry	Footage	1946	1945	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	26	14	0	*12	47,153	83	80	0	0	0	0	0	0	0	0	0	0
Pennsylvania	72	31	4	†37	113,397	213	169	0	0	0	0	0	0	0	0	0	0
West Virginia	15	3	6	6	40,977	33	35	0	0	0	0	0	0	0	0	0	0
Ohio	22	1	11	10	69,102	44	37	0	0	0	2	2	0	0	2	4	6
Indiana	7	5	0	2	15,350	20	7	0	0	0	1	1	0	0	0	1	1
Kentucky	10	1	1	8	23,551	28	17	0	0	0	3	3	0	0	0	5	5
Illinois	26	14	1	*11	65,969	108	122	2	0	0	5	7	2	0	0	23	25
Michigan	11	7	0	4	32,620	32	43	0	0	0	3	3	0	0	0	6	6
Kansas	68	36	11	21	222,469	144	73	1	0	0	13	14	1	0	0	20	21
Neb., Mo., Iowa	1	0	0	1	5,110	1	6	0	0	0	1	1	0	0	0	1	1
Oklahoma	67	41	0	26	222,405	144	134	3	0	0	11	14	4	0	0	24	28
Texas	160	100	7	53	634,827	483	373	0	0	1	29	30	7	0	2	71	80
North Central	76	46	0	30	201,438	177	108	0	0	0	12	12	2	0	0	21	23
West	21	18	0	3	101,661	97	87	0	0	0	3	3	3	0	0	9	12
Panhandle	6	4	1	1	18,892	22	18	0	0	0	1	1	0	0	0	1	1
Eastern	17	11	3	3	84,582	44	18	0	0	0	3	3	0	0	0	8	8
Gulf Coast	32	21	0	11	210,074	115	105	0	0	0	5	5	1	0	0	21	22
Southwest	8	0	3	5	18,180	28	37	0	0	1	5	6	1	0	2	11	14
Louisiana	24	17	2	5	271,037	59	48	3	0	0	1	4	8	0	0	7	15
Northern	12	7	2	3	49,122	25	15	1	0	0	1	2	2	0	0	4	6
Southern	12	10	0	2	121,915	34	33	2	0	0	0	2	6	0	0	3	9
Arkansas	2	2	0	0	6,090	6	12	0	0	0	0	0	0	0	0	1	1
Mississippi	4	2	0	2	29,542	12	16	0	0	0	1	1	0	0	0	2	2
Southeastern States	2	1	0	1	8,202	5	1	0	0	0	1	1	0	0	0	4	4
Montana	2	2	0	0	4,797	15	13	0	0	0	0	0	0	0	0	0	0
Wyoming	1	0	0	1	2,503	7	15	0	0	0	1	1	0	0	2	2	4
Colorado	4	4	0	0	25,701	9	4	0	0	0	0	0	0	0	0	1	1
New Mexico	6	5	0	1	22,804	23	30	0	0	0	0	0	0	0	0	1	1
California	39	28	3	8	168,019	106	132	0	0	1	6	7	0	0	1	13	14
Total United States	569	314	46	209	2,031,625	1,575	1,367	9	0	2	78	89	22	0	7	186	215
Total previous week	572	320	47	205	2,008,796	1,006	910	11	0	2	72	85	13	0	5	108	126
Total Jan. 20, 1945	440	239	47	154	1,609,018	1,367	1,002	15	0	3	74	92	31	0	6	214	251

Service wells included: *12, †36.

MARKET QUOTATIONS

(This service is abbreviated because most refinery products are selling at the Government's price ceilings. Quotations on other products than those shown here furnished on request. Quotations are f.o.b. plant in tank cars and in cents per gal.)

REFINERY GASOLINE

Octane (A.S.T.M.)	78-80†	73-75
Mid-Continent*	6.250-6.50	5.50-5.75
Gulf Coast	6.75	5.75-6.250
Northeast Coast		9.875
California		6.50-7.00

*Basic Oklahoma Group 3. †1939 C.F.R. (research method).

NATURAL GASOLINE

Grades:	28-70	18-55
Oklahoma (Group 3)	4.000	4.800
N. Texas (f.o.b. plant)	3.250	3.900
N. Louisiana (f.o.b. plant)	3.750	4.500
California	4.875	5.500

CRUDE-OIL PRICES

Representative posted schedules per bbl.	
East Texas	$1.25
Conroe	1.43
Tepetate, Louisiana, avg. grav.	1.20
Illinois Basin	1.37
Pecos County, Texas	.95
Bradford, Pennsylvania	3.00
Van, Van Zandt County, Texas	1.08

Note: Exclusive of subsidy.

GRAVITY SCHEDULES

Top prices include all gravities above grades designated, and* low prices include all gravities below grades designated:

Gravity—	Signal Hill, Calif.	Oklahoma, Kansas	Gulf Coast Texas	West Tex.*
18-18.9	$0.80	....	....	...
19-19.9	.84	....	$1.06	$0.70
20-20.9	.88	$0.85	1.08	.72
21-21.9	.92	.87	1.10	.74
22-22.9	.96	.89	1.12	.76
23-23.9	1.00	.91	1.14	.78
24-24.9	1.03	.93	1.16	.80
25-25.9	1.07	.95	1.18	.82
26-26.9	1.11	.97	1.20	.84
27-27.9	1.15	.99	1.22	.86
28-28.9	1.18	1.01	1.24	.88
29-29.9	1.20	1.03	1.26	.90
30-30.9	1.23	1.05	1.28	.92
31-31.9	....	1.07	1.30	.94
32-32.9	....	1.09	1.32	.96
33-33.9	....	1.11	1.34	.98
34-34.9	....	1.13	1.36	1.00
35-35.9	....	1.15	1.38	1.02
36-36.9	....	1.17	1.40	1.04
37-37.9	....	1.19	1.42	1.06
38-38.9	....	1.21	1.44	1.08
39-39.9	....	1.23	1.46	1.10
40 and above	....	1.25	1.48	1.12

*Includes Lea County, New Mexico.

A.P.I. REFINERY REPORT

(Figures in thousands of barrels)
Week ended January 12, 1946

	Dly. crude runs to stills	Stocks: Gasoline	Distillate	Residual
East Coast	650	20,711	9,835	5,883
Appalachian	148	4,120	678	441
Ill., Ind., Ky	707	20,520	4,927	2,492
Okla., Kan., Mo.	383	9,007	1,713	1,017
Inland Texas	208	2,864	365	764
Tex. Gulf Coast	1,155	17,344	5,939	5,397
La. Gulf Coast	314	5,296	1,870	1,163
North La., Ark.	57	1,969	457	260
Rocky Mtn.	128	2,016	428	742
California	748	15,727	7,147	22,340
Total 1-12-46	4,498	99,574	33,359	40,499
Total 1- 5-46	4,651	98,494	35,199	42,371
Total 1-13-45	4,580	88,464	35,490	53,763

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended:	Bbl. of crude*
January 12, 1946	219,219,000
January 5, 1946	218,193,000
January 13, 1945	221,114,000

*Excludes unrefinable Calif. stocks.

TRENDS

DAILY AVERAGE PRODUCTION FOR WEEK

	Jan. 19 crude oil	Bureau of Mines demand forecast	Jan. 12 crude oil
Alabama	600	400	800
Arkansas	77,500	76,000	77,250
California	845,750	832,000	847,750
Colorado	21,500	20,000	21,550
Eastern	66,200	63,200	63,550
Florida	100	100	100
Illinois	204,300	206,100	205,800
Indiana	14,100	13,000	15,300
Kansas	261,500	260,000	240,200
Kentucky	28,900	28,500	29,950
Louisiana	368,800	365,000	367,500
North Louisiana	79,950	.....	78,650
South Louisiana	288,850	.....	288,850
Michigan	47,150	46,000	47,100
Mississippi	56,600	48,000	53,600
Montana	22,050	21,000	22,050
Nebraska	750	800	750
New Mexico	100,350	98,000	100,350
Oklahoma	391,850	382,000	391,050
Texas	2,000,800	1,950,000	2,000,800
East Texas	320,000	.....	320,000
East Central Texas	140,050	.....	140,050
North Central Texas	152,800	.....	152,800
Texas Panhandle	81,000	.....	81,000
West Texas	489,300	.....	489,300
Southwest Texas	328,900	.....	328,900
Texas Gulf Coast	488,750	.....	488,750
Wyoming	91,600	90,000	84,900
Total United States	4,600,400	4,500,000	4,570,350
Change from prev. week, up	30,050		
Total production January 1-January 19, 1946			95,838,750 bbl.
Same period last year			89,357,600 bbl.

CRUDE-OIL STOCKS 219,219,000 bbl. as of Jan. 12—up 1,026,000 bbl. One year ago 221,114,000 bbl.

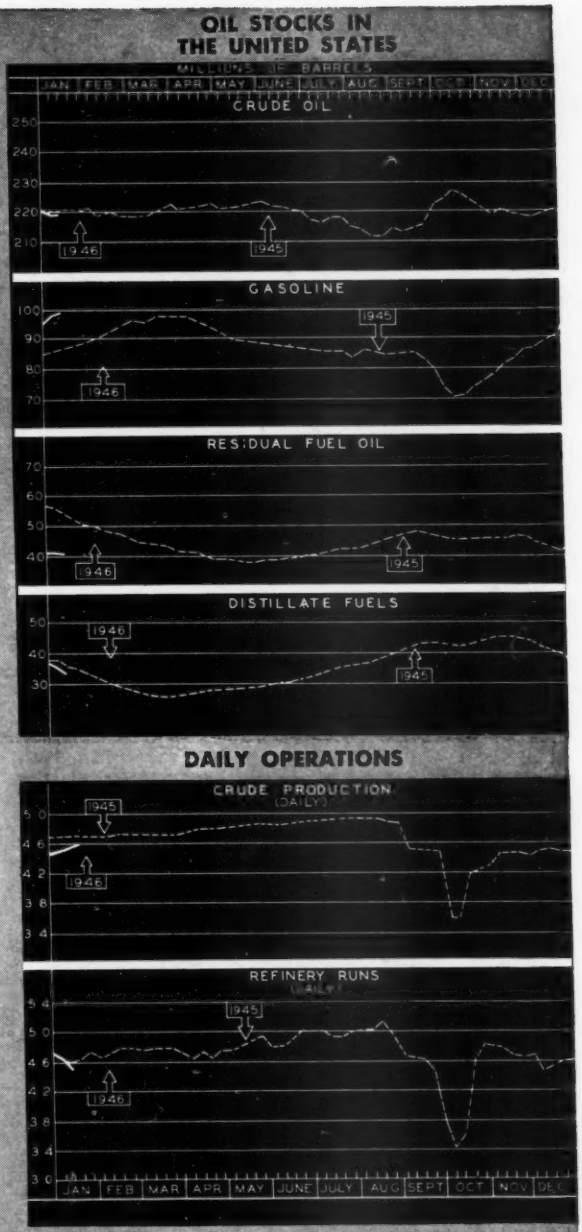
GASOLINE STOCKS 89,574,000 bbl. as of Jan. 12—up 1,080,000 bbl. One year ago 88,464,000 bbl.

RESIDUAL FUEL-OIL STOCKS 40,499,000 bbl. as of Jan. 12—down 1,872,000 bbl. One year ago 53,763,000 bbl.

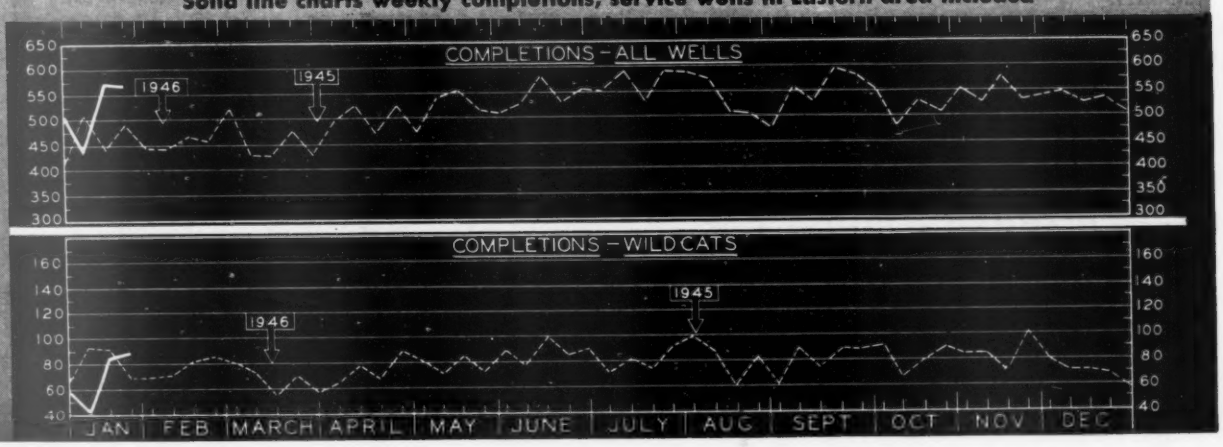
GAS OIL AND DISTILLATE STOCKS 33,359,000 bbl. as of Jan. 12—down 1,840,000 bbl. One year ago 35,490,000 bbl.

CRUDE-OIL PRODUCTION 4,600,400 bbl. as of Jan. 19—up 30,050 bbl. One year ago 4,710,550 bbl.

REFINERY RUNS 4,498,000 bbl. daily week ended Jan. 12—down 153,000 bbl. One year ago 4,580,000 bbl.



Solid line charts weekly completions, service wells in Eastern area included



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Overall length—19' 4" Height to drum center—5' 3½"
Road width—8' 0". Wheel base—15' 0" Four speeds
forward to 20 m.p.h. Maximum line pull—66,730 lbs.
42" winch drum. Capacity—20,600' of ½" line. Eight
selective speeds on winch to 1,059' p.m. Six-cylinder
tractor-type engine develops 590 ft. lbs. torque.
This unit also available with 52" drum.
FRED E. Cooper

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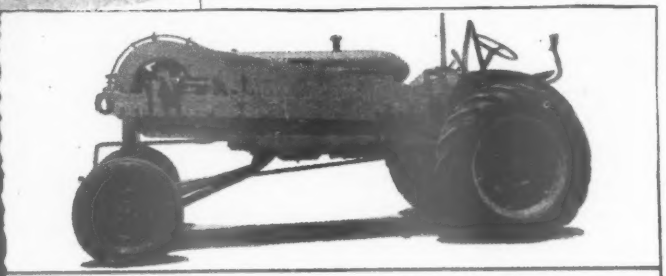
For 26 years the power and performance of Fred E. Cooper Servicing Units, Winches and Winch Tractors have been given high rank in the oil industry.



A Lot of Work from a Small Package

Allis-Chalmers Model W Servicing Units fill the need for mobile, fast well servicing equipment where the depths of the wells and amount of servicing needed do not require the use of the larger Models L, E or M. The Model W does the work usually associated with heavier units of other makes. It's designed to operate at maximum capacity with safety and economy

ALLIS-CHALMERS
MODEL W WINCH TRACTORS

These units are available with rotary drive and telescoping masts. They will handle 3,500 feet of 2 in. free tubing. Maximum line pull is 20,666 lbs. Drum capacity is 5,660 ft. of ½ in. line. The operator has available 8 pulling speeds to 539 ft. p.m. at 1,200 engine r.p.m. The pulling drum, like all A-C units, is equipped with Cooper, patented, Circulating Air Cooled Brakes. Maximum road speed of unit is 15 m.p.h., four speeds forward and one reverse.

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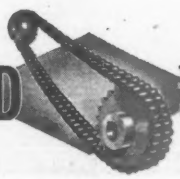

DIAMOND ROLLER CHAINS

Exploration and Drilling

Keyes Discovery Opens Large Area

THE Keyes area of Cimarron County, Oklahoma, starts its third year of life with what is considered the most important discovery to date in 1946 from the standpoint of bringing a large area into production. The new discovery is Pure Oil Co. 1 Johnson, SW SW SE 12-5n-7e, second oil well in the entire Oklahoma Panhandle, which put an average of 519 bbl. of oil daily into the tanks on the first 3 days of initial pumping tests.

Surpassing the discovery well of the area, Pure 1 Oklahoma State, SE SE NW 7-5n-8e, which was completed in July of last year for a potential of 104 bbl. daily, the 1 Johnson is producing from the Cherokee sand in the lower Pennsylvanian formation at a depth of 4,855-85 ft.

Development of production in the Keyes area is a result of the exploration program of the Pure Oil Co. in Cimarron County. Pure began its operations in December 1942, and has drilled two gas wells, two oil wells and one dry hole. Its 1 Rose, NE SW 26-5n-8e, produced 7,000,000 cu. ft. gas daily and 1 Cox, SE SE 16-5n-8e, produced 19,000,000 cu. ft. gas daily. The 1 Oklahoma State and 1 Johnson are the oil wells. The failure was the 1 Alliance Insurance Co. in NE NE 9-5n-7e. The two gas wells are shut in awaiting a market. Tanks have been installed at each of the oil wells, and with the 2,000-bbl. storage capacity on each location filled, the wells have been shut in.

Pure is now drilling three widely separated wells in the area. They are 1 Sparkman, NE NE NE 3-5n-8e; 1 Jermyn, SW SW SW 18-5n-8e, and 1 McCoy, NW NW NW 2-4n-8e. Drilling is under way at all of these wells at the present time and production from any one of them would greatly enlarge the probable producing area.

The new discovery, despite its successful completion, leaves unanswered many questions, in so far as the geology of the Keyes area is concerned. The two oil wells are 1 mile apart and the gas wells are approximately 3 to 5 miles southeast of these. What will be found between or in other parts of the area is still unknown, but the wells now in progress may shed considerable light on the future prospects.

The Keyes area lies in the southwestern edge of the Anadarko-Panhandle region where the Anadarko Basin pinches out against the Las Animas Arch. The sediments in this region are found at a much shallower depth than in the basin proper and it is possible that good production may also be developed from deeper formations that have not yet been penetrated in the deeper areas.

Production and completion tables formerly appearing in this section of the Journal are now published with other statistical data. In this issue the statistical trend information is published on pages 310-311.

EASTERN TEXAS

Deep Test in Chapel Hill Considered Failure

DALLAS.—Sinclair Prairie Oil Co. 1 Shofner, Dickerson Survey, deep test in the Chapel Hill pool of eastern Smith County, is considered a failure in the Smackover. The well was drilled to 13,577 ft. where the drill pipe stuck. It will be completed in the Pettit as a gas-distillate producer, this being the proven zone in this territory. Another deep test, Humble Oil & Refining Co. 1 Pickering, Francois Survey, in the Huxley area of Shelby County, was drilling below 12,168 ft. in the Buckner.

Delta Drilling Co. 1 Livingston, Nacogdoches University Survey, wildcat 3 miles southeast of Reilly Springs in southern Hopkins County, showed fresh water from the Gloyd section of the Rodessa through perforations at 8,005-32 ft. The test showed for possible gas-distillate production in this zone on a drill-stem test during drilling operations.

Magnolia Petroleum Co. 1 Orr, Fowler Survey, wildcat 3½ miles southwest of Avinger, northwestern Marion County, having indicated production in the Travis Peak, will drill to 10,000 ft. before completing. It is now drilling below 6,360 ft. in sand and shale. Humble 1 Freeman, John Little Survey, wildcat in the Brushy Creek sector of northeastern Anderson County, with elevation of 562 ft., has called the base of the Goodland at 7,470 ft. It was drilling below 8,170 ft.

Hawkins field, Wood County, reported seven completions this week and Carthage field, Panola County, three. Hawkins field has six new locations and New Hope field, Franklin County, Waskom field, Harrison County, Jefferson field, Marion County, Carthage field and Winnsboro field, Wood County, each had one. Carthage field has 31 drilling wells; Hawkins field has 20; Pickton field, Hopkins County, 7 and Waskom and Jefferson fields each 3.

EASTERN TEXAS WILDCAT FAILURES

Falls County: H. C. Cochran and Zephyr Oil 1 Dr. Buie, M. Sessam Sur., 5 mi. S and E Marlin, elev. 399, ft., Buchner 6,280 ft., Smackover 6,460 ft., dry, TD 7,063 ft.

Fannin County: R. J. Abbey 1 Maud Barker, Thos. Harrison Sur. 12 mi. N Bonham, elev. 556 ft., Paleozoic 2,885 ft., dry, TD 2,920 ft.

Limestone County: Geo. B. McCamey 1 J. L. Raborn, J. N. Acosta Sur., 5 mi. S Groesbeck, elev. 505 ft., Woodbine 3,700 ft., dry, TD 3,795 ft.

PERMIAN BASIN

McKee Pay Opened In Keystone Sector

MIDLAND.—Stanolind Oil & Gas Co. 1 Mack Taylor, Section 8, Block B-2, Public School Lands, has assured production from the McKee section of the Simpson for the multipay Keystone sector of Winkler County. It is a mile east of Ellenburger production in the field. The well was plugged back to 9,770 ft. to test the McKee after showing sulfur water in the Ellenburger. On the latest test, after being shut in for 20 hours, it flowed 17 bbl. of oil in 2 hours through 10/64-in. choke. Sun Oil Co. 2 Wheeler, Section 13, Block B-7, Public School Lands, on the southwest side of the Wheeler pool in eastern Winkler, ran a 1-hour drill-stem test at 9,167-9,320 ft. in the Silurian and recovered 700 ft. of drilling mud with no shows. It was being deepened.

Magnolia Petroleum Co. 1-A Cowden, Section 7, Block A-55, Public School Lands, west offset to the discovery in the Dollar Hide pool of southwestern Andrews County, kicked off and flowed 101 bbl. of new oil in 14 hours through ⅜-in. tubing choke. Production is from 7,957-8,015 ft. Magnolia 2 Martin, Section 12, Block A-47, Public School Lands, Andrews County wildcat 13 miles west of Andrews, was drilling below 9,727 ft. in hard Devonian lime.

Crane County: Atlantic Refining Co. 1-L University, Section 28, Block 31, University lands, 1-mile north outpost to the discovery well in the Block 31 pool which produces from both the Devonian and Ellenburger, ran a 1-hour dril-stem test at 8,768-8,873 ft. in the Devonian, using a ⅜-in. choke and 3,000-ft. water blanket. Recovery was six stands of heavily oil and gas-cut mud with no water. Atlantic 1-E University, Section 33, a half mile west of the discovery, took a 1-hour drill-stem test at 8,500-8,610 ft., also using ⅜-in. choke and 3,000-ft. water blanket. Recovery was six stands of oil-cut mud with no water. It was drilling ahead.

Fullerton field, Andrews County, reported three completions this week, Sharon Ridge field, Scurry County, two and Keystone-Holt and Keystone-Ellenburger, Winkler County one each. Fullerton field and TXL field, Ector County, each had four locations and World-Powell field, Crockett County, three. Keystone-Ellenburger field has 36 drilling wells, Keystone-Holt 6 and Keystone-Colby 3. The TXL field has 34.

Fullerton field 24 and the Block 31 field, Crane County, 14.

WEST TEXAS WILDCAT FAILURES

Hale County: Globe Oil & Refining 1 Claude Downs, Sec. 5, Blk. JT, TTRR Sur., 7 mi. W and 1 mi. N Plainview, dry, TD 6,437 ft.

Crockett County: Gulf 1-O University, Sec. 12, Blk. 29, University land, 10 mi. E Sheffield, elev. 2,719 ft., Ellenburger 8,548 ft., dry, TD 8,665 ft.

Pecos County: Byrd-Frost, Inc. 1 J. S. Jackson, Sec. 46, Blk. 11, H&GN Sur., 6½ mi. S Girvin, elev. 2,587 ft., dry, 1,364 ft.

SOUTHEASTERN NEW MEXICO

HOBBS.—Humble Oil & Refining Co. 8 Greenwood, 9-22s-37e, south offset to the Ellenburger discovery in the Penrose-Skelly field, Lea County, kicked off and flowed 58 bbl. per hour of pipe-line oil through perforations at 8,004-30 ft. A northwest outpost to the discovery, Rowan Drilling Co. 3-B-0 Elliott, 9-22s-37e, flowed 51.3 bbl. of oil to storage in 75 minutes on a 2-hour drill-stem test at 8,147-89 ft. It then began running casing for completion. Magnolia Petroleum Co. 9 Argo-Brunson, 9-22s-37e, a northeast offset to the discovery, flowed 92 bbl. of oil in 80 minutes on a 150-minute drill-stem test of the Ellenburger at 7,656-7,881 ft. It was also making preparations for completion. With elevation of 3,436 ft., Ellenburger was topped at 7,675 ft.

Humble 1 Cooper, 23-24s-36e, a depleted shallow well in the Cooper-Jal field in southeastern Lea County, recovered 90 ft. oil and gas-cut drilling mud on a 1-hour drill-stem test at 6,817-46 ft. It was coring below 6,888 ft. in the middle Permian and planning to test again.

The Paddock, Cooper-Jal, Maljamar and Penrose-Skelly fields, Lea County, each reported one completion this week. Lea County had three field locations, two in Penrose-Skelly field and one in Paddock field. Lea County has 58 drilling wells with 7 wildcats. Eddy County has 52 with 16 wildcats.

PANHANDLE WILDCAT FAILURE

Potter County: Indiana Farm Bureau 2 Bush, Sec. 12, Blk. M-19, G&M Sur., 23 mi. NW Amarillo, elev. 3,280 ft., dry, TD 4,005 ft.

The Fabco Dual Drive provides that additional margin of safety for standard production model trucks which are used in geophysical work in the petroleum industry.

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SOUTH LOUISIANA

Condensate Pool Opener Flows 96 Bbl. Per Day

NEW ORLEANS. — New gas-condensate pool opener in Jefferson Parish, at East Barataria Bay, in The Texas Co. 1 State-Barataria Bay. Well flowed an estimated 96 bbl. of 55-gravity condensate with 1,080,000 cu. ft. of gas daily through a 10/64-in. choke with 2,750 lb. tubing pressure. Total depth of the hole is 14,490 ft. with 5½-in. casing set at 12,164 ft. and perforated at 11,397-407 ft. for completion.

Union Oil Co. of California is having some trouble in getting 1 Milliken & Farwell, new field opener, on the Hahnville prospect, St. Charles Parish, to flow. After a squeeze job through perforations at 8,776-85 ft. with 54 shots, it was reperforated in exactly the same level and flowed by heads on a drill-stem test with pressures from zero to 110 lb. through a ¼-in. choke. The oil is clean, and no water is in evidence, however on a pressure test with 4,000 lb. pressure, fluid level remained constant and would not go through. Operators are now preparing to reperforate. On the initial test, the well flowed at the rate of 166 bbl. of 33-gravity oil daily but would not clean. Total depth of the hole is 9,981 ft., and the 5½-in. casing is cemented at 8,897 ft.

Barnsdall Oil Co. 1 M. M. Stafford unit, 36-7s-3w, is the deepest test the company has drilled to date in the West Tepetate field of Jefferson Davis Parish. The well is now cleaning to open a new deep producing horizon for the area. Total depth is 10,005 ft. and 5-in. liner is cemented on bottom with 7-in. casing set at 9,314 ft. Perforations were made at 9,894-9,902 ft. and the well is cleaning through a 7/64-in. choke, gaging 6,300 lb. flowing pressure on the tubing, and a shut-in pressure of 6,400 lb.

In the east extension area of North Cankton field, Lafayette Parish, Shell Oil Co., Inc. 1 Breaux-Kilchrist unit, 65-8s-4e, has been completed as a gas-condensate producer in a new sand topped at 10,915 ft. Flow was gaged at 55 bbl. of 54-gravity condensate daily through a 7/64-in. choke with 3,550 lb. pressure on the tubing, and a gas-conglomerate ratio of 17,200 to 1. Production is through 200 perforations at 10,916-66 ft. Total depth is 11,010 ft., and the 5½-in. casing cemented at 11,057 ft.

Fifteen locations were reported this week, with three wildcats, one each in Iberville, St. Bernard, and St. Mary parishes. There were 12 completions, 10 producers and 2 dry. Evangeline Parish and Jefferson Parish each received a new pool opener.

SOUTH LOUISIANA SUCCESSFUL WILDCATS

Evangeline Parish: New oil pool, Mamou discovery—Magnolia 1 Morein, NW SW 5-5s-1e, 1½ mi. NE of Mamou, Wilcox sand 11,510 ft., oil sand 11,510-553 ft., TD 11,653 ft., perf. 11,519-34 ft., PT 208 bbl. 24 hours through 8/64-in. choke, gas-oil ratio 3,700, TP 4,200 lb., gravity 46°, no water.

Jefferson Parish: New gas-condensate pool, East Barataria Bay discovery—Texas 1 State-Barataria Bay, in the bay 20s-25e, TD 14,490 ft., perf. 11,397-407 ft., estimated 95 bbl. condensate and 1,080,000 cu. ft. gas per day through 10/64-in. choke, gas-oil ratio 67,500, TP 2,750 lb., gravity 55°, no water.

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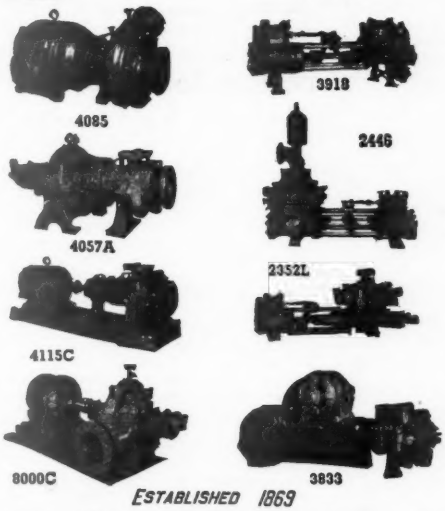

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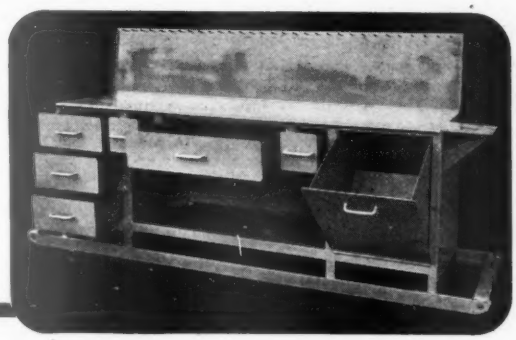

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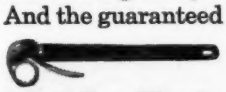

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CANADIAN FIELDS

Turner Valley Well Has Good Drill-Stem Test

CHATHAM.—In the Turner Valley north extension, Home Oil 20, LSD 7, 21-24-4w5, halted drilling at 9,577 ft., believed just above the lower porous zone, for a test of the upper horizon of the Madison limestone. The well got the lime contact at 9,310 ft., with upper porous at 9,430-9,515 ft. Lime contact was 4,879 ft. below sea level compared with 5,598 ft. below in Shell 4-24-J, on the Jumping Pound structure, which got a big gas flow and some water-free oil from the upper lime at 9,947 ft. A preliminary drill-stem test gave favorable indications at Home 20. Farther north and west in Turner Valley, Home Oil 21, LSD 11, 34-21-4w5, got the Madison at 9,525 ft., 215 ft. deeper than Home 20 and 5,144 ft. below sea level. Production in these outpost wells would indicate an important extension of the field.

Central Foothills.—Shell Exploration Co. is planning another important development in the central foothills of Alberta, where it has secured 175,150 acres in Townships 29 to 33, Ranges 8w5 and 9w5, including areas on the Red Deer and James Rivers. The acreage is a previous untested area lying between wildcat wells drilled some years ago, and extends south from the area being tested by Ram River Oils, where a small production of light crude has been encountered.

Steveville.—In the Steveville - Princess field, P. S. & D. 1, LSD 2, 3-20-12w4, total depth 3,420 ft., has been plugged back to 2,960 ft. to test basal Colorado and upper Blairmore sands, with early indications of gas production. Princess-C.P.R. 38, 31-19-11, LSD 15, 31-19-11w4, finished at 4,120 ft., is dry.

Kinsella.—In the Kinsella field, east-central Alberta, Imperial-Kinsella 4, LSD 11, 16-49-9w4, finished in the Viking sand at 1,993 ft., is testing gas production. Two new locations have been made.

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CALIFORNIA

Shell Opens Up New Gas Field in Solano County

LOS ANGELES.—To Shell Oil Co., Inc. goes the distinction of having opened up the first new field in California during 1946 although Richfield Oil Corp. undoubtedly will have a new oil field at Bandini as soon as present exploration work is concluded. Shell's new discovery is a probable commercial gas field as no crude oil was found and none was expected. This wildcat was started as a gas test and, like Shell's Lambie well at Kirby Hills last year, discovered a new gas accumulation in Solano County.

The discovery well, located in Section 29-8n-1e, is producing from 30 ft. of formation which is the probable equivalent of the Emigh sand of Eocene age. The extent and production characteristics of Shell's new discovery remain to be determined by additional drilling and for this reason the field's importance from a production standpoint will remain conjectural pending further developments.

Richfield Oil Corp. should know within the next few days what it has at Bandini in Los Angeles Basin as the company has plugged back 1 Union Pacific to the shoe of the 8⅝-in. casing and is preparing to make a production test. This wildcat was carried down to 9,629 ft. and casing landed at 8,561 ft. The lower part of the hole failed to show anything and this prompted the company to return to the upper sand which looked so good during drilling operations. If a satisfactory water shut off has been effected, Richfield should prove up a new oil field at Bandini. Other wells now under way should prove or disprove the importance of this area very shortly as two are within 500 ft. of the objective.

Tide Water Associated Oil Co. has started swabbing operations on 154 Luck, a deep test in the old Kern River field, and the importance of this potential producer should be known within a short time. Only 5 ft. of formation is open and for this reason no large initial daily production can be expected unless the well shows more gas than expected. Tide Water's showing in this well is in the Eocene and a large completion would greatly add to the state's crude oil reserves. Tide Water has extensive holdings in the Kern River field and consequently a successful completion would greatly augment the company's reserves.

New locations staked this week greatly exceeded completions due primarily to 13 locations made by Long Beach Oil Development Co. at Wilmington, 5 locations in the same field by Signal Oil Co., 2 by Richfield Oil Corp. and 1 by General Petroleum Corp. Locations in other fields were scattered throughout the state.

CALIFORNIA SUCCESSFUL WILDCAT

Solano County, Winters: New gas field—Shell 1 McCune, 29-8n-1e, flow 6,300,000 cu. ft. dry gas, no oil, TD 5,528 ft., PB 5,240 ft., perf. 5,209-39 ft.

CALIFORNIA WILDCAT FAILURES

Kern County, Mount Poso: E. A. Parkford 1 Parkford, 14-27s-28e, bottomed in gray sand, Vedder sand at 1,287 ft. was barren and was too thin to justify test, TD 1,310 ft.

Mount Poso: Gene Reid Drilling 1 Hooper, 36-26s-27e, bottomed in gray sand, Olcese 1,536 ft., Vedder sand of Miocene age 2,726 ft., all sands were barren, TD 2,762 ft.

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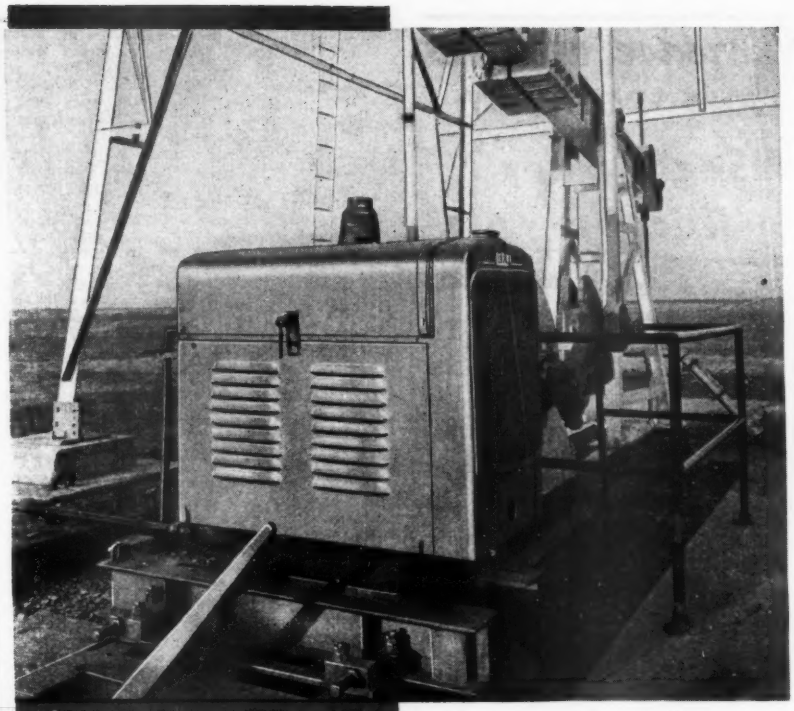

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Old River: Shell 45-16 K.C.L., 16-31s-26e, lower part of hole barren, form. test 7,470-80 ft. and 7,620-30 ft. tested wet, TD 11,500 ft.

Rosedale: General Petroleum 82-36 Pioneer, 36-29s-26e, bottomed in hard gray sand, Vedder sand of Miocene age was found barren at 10,365 ft.

Los Angeles County, Aliso Canyon: Seaboard 1-A Evans, 23-3n-16w, bottomed in hard conglomerate, no important showings, TD 8,209 ft.

Solano County, West Rio Vista: Standard 1 Natural Gas Corp.-Bacon, 29-4n-1e, bottomed in gray sand, all sands tested

N. CENTRAL TEXAS

Montague County Test Producing From Bend

WICHITA FALLS.—S. D. Johnson 1 Crenshaw, W. Wallace Survey, Abstract 834, wildcat 1 mile northwest of Belcherville, northwestern Montague County, has been completed to pump 72.60 bbl. of oil in 24 hours. Pay is in the Bend at 5,551 ft. Johnson 1 Rich, W. S. Harkins Survey, wildcat 3 miles northwest of Belcherville, drilled lime with stain of oil at 5,582-5,602 ft. and conglomerate with stain at 5,602-06 ft. On a 30-minute drill-stem test at 5,581-5,606 ft., recovery was 100 ft. of slightly oil-cut drilling mud with a show of gas. On another 30-minute drill-stem test at 5,622-46 ft., 75 ft. of oil and gas-cut drilling mud was recovered. It was drilling below 5,656 ft. in lime.

L. T. Burns 1 J. P. Dunagan, Block 170, TE&L Survey, has found a deeper pay in the Mississippian lime in the Crain pool of northern Young County. The test was drilled to 5,253 ft. and encountered first saturation at 5,038 ft. On a drill-stem test, it showed gas in 2 minutes and flowed an unestimated amount of oil in 14 minutes. Operator is preparing to complete. Burns 1 Bishop, Block 162, TE&L Survey, in the same section, topped the Caddo at 4,269 ft. It drilled saturated Caddo lime to 4,294 ft. It was drilling ahead to the Mississippian.

Electra field, Wichita County, reported 10 completions this week, KMA field, Wichita County, 8, and Thomas and Holliday fields, Archer County, each 3. Electra field had 10 locations and KMA field had 4. Cooper field, Archer County, and Sivells Bend field, Cooke County, each has eight drilling wells, Hildreth field, Montague County, has seven and National field, Wilbarger County, has six.

In West Central Texas, Stephens County Regular field, reported two completions this week and Shackelford County Regular field and Reddin field, Taylor County, each had one. Cisco field, Eastland County, Jones County Regular field, and Ibex field, Shackelford County, each had one new location. Jones County led in drilling wells this week with 15, 3 in Jones County Regular field, 1 in Noodle field and 11 wildcats. Stephens County had 14 with 6 in Stephens County Regular field, 1 in Loving field and 7 wildcats.

NORTH CENTRAL TEXAS WILDCAT FAILURES

Archer County: Fortex Oil 1 R. Parrish et al, Sec. 98, ATNCL Sur., 5 mi. W and 6 mi. N Archer City, elev. 1,014 ft., dry, TD 1,620 ft.

H. S. Grace 1-A A. Schlumpf, Sec. 37, Blk. 4, Clark & Plumb Sur., 4 mi. W and ½ mi. S Windthorst, dry, TD 1,198 ft.

Chas. E. Morrison 4 W. R. Hammond, H. Corzine Sur. A-56, 5 mi. N and 2 mi. E Amarene, elev. 946 ft., dry, TD 1,435 ft.

Cooke County: Nu-Enamel Oil 1 M. B. Gwynn, H. Jennings Sur. A-531, 2 mi. W Lindsay, elev. 859, Ellenburger 1,643 ft., dry, TD 1,681 ft.

Haskell County: C. D. Neff 1 Baker, Sec. 98, C. Winters Sur., 11½ mi. E and ½

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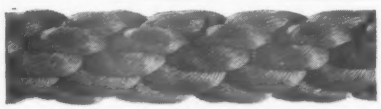

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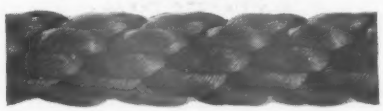

mi. N Wienert, elev. 1,389 ft., Caddo 5,070 ft., Mississippian 5,410 ft., dry, TD 5,512 ft.

Montague County: Bridwell Oil 1 T. L. Cobb et al, R. H. Grimes Sur. A-300, 6 mi. N and 2 mi. E Saint Jo, elev. 813 ft., granite 3,154 ft., dry, TD 3,186 ft.

Throckmorton County: Chalmette Petroleum 1-A C. R. Perry, Sec. 2165, TE&L Sur., 2 mi. S and W Elbert, elev. 1,260 ft., Mississippian 4,776 ft., dry, TD 4,860 ft.

Wichita County: Frank Wood 1 Ed Foster, Sec. 2, HT&B Sur. A-633, 4½ mi. W and ½ mi. S Clara, elev. 1,107 ft., dry, TD 2,009 ft.

Wilbarger County: Amerada Petroleum 1 E. J. Judd, Sec. 59, Blk. 15, H&TC Sur., ½ mi. E Doan, elev. 1,183 ft., dry, TD 5,530 ft.

National Association 1 Bessie Ward Clancy, Sec. 26, Blk. 10, H&TC Sur., 3 mi. E Chillicothe, elev. 1,407 ft., dry, TD 5,801 ft.

Young County: G. E. Kadane & Sons 1 Allar Co. et al, Sec. 3410, TE&L Sur., 3 mi. S and 2 mi. W. Belknap. elev. 1,144 ft., dry, TD 3,536 ft.

Panhandle Refining 1-A Eula Thompson, Sec. 2693, TE&L Sur., 2 mi. E and 1 mi. N Graham, elev. 1,109 ft., Caddo 3,855 ft., dry, TD 4,263 ft.

SOUTHWEST TEXAS

Lee County Wildcat Has Good Drill-Stem Test

CORPUS CHRISTI.—A new field is indicated for Lee County at Humble Oil & Refining Co. 1 Geo. W. Vick, wildcat test in the Tanglewood area, Bethel Smith Survey. Good recovery of oil and gas was made on drill-stem test at 6,063-73 ft., and oily mud on a test at 6,050-76 ft. The 9⅝-in. casing was set at 6,101 ft., and perforated with 60 shots at 6,060-75 ft. This test is now flowing 100 bbl. of fluid daily, 1 per cent oil, and 1,080,000 cu. ft. of gas through a 3/6-in. choke, with 1,725 lb. pressure on tubing. Perforations are being squeezed for another test. Total depth is 6,435 ft.

Humble 2-B D. J. Sullivan, wildcat in San Antonio de Encinal grant, about 18 miles southeast of Falfurrias, showed gas-condensate at various levels on drill-stem tests while drilling down to 8,548 ft. Operators are drilling ahead from 8,548 ft. in sandy shale.

Mills Bennett 1 Martha Berger et al, wildcat in J. M. Urangá Grant, 2 miles southwest of Tuleta, in Bee County, which has indicated gas-condensate production in 48 ft. of sand in the Slick and in 37 ft. of sand in the Luling zones, is drilling ahead from 8,461 ft. Operators plan to drill to approximately 8,560 ft., run a log and set liner for completion attempt.

Quintana Petroleum Corp. 2 Shofner, in Sheriff field, Calhoun County, flowed a potential of 185 bbl. daily of 33-gravity oil through a 3/16-in. choke, tubing pressure 440 lb., casing pressure 830 lb., no water, gas-oil ratio 346 to 1. Total depth is 5,748 ft. with 5½-in. casing set to 5,718 ft. which is top of the pay.

Thirty-two new locations were reported this week with five being wildcats, two in Duval and one each in Goliad, Webb and Zavala counties. The most activity is shown in Kleberg County with seven new starts. Brooks County is next, receiving five. Of the 24 completions reported, 8 are wildcats, 7 dry and 1 new gas pool opener in McMullen County. The dry wildcats are located two in Starr, one each in Duval, Hidalgo, Jim Hogg, San Patricio and Webb counties.

SUCCESSFUL WILDCAT COMPLETED IN SOUTHWEST TEXAS

McMullen County: New gas pool—J. W. Gorman 1 Reiz Bros., 20 mi. NE of Freer, in AB&M Sur., Section 75, 1½ mi. S of S. Campana field, TD 3,176 ft., perf. 1,929-34 ft., and 1,945-50 ft.,

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WILDCAT FAILURES IN SOUTHWEST TEXAS

Duval County: Don H. Marsh et al 1 Dolores Garcia, Share 4, Santa Cruz De Concepcion Grant, 4 mi. S. of Concepcion, dry, TD 2,513 ft.

Hidalgo County: W. D. Kennard 1 Isabel Y. Garcia et al, Porcion 42, 6 mi. SE of Sullivan City, dry, TD 3,525 ft.

Jim Hogg County: Sid Katz 1 C. W. Hellen, El Randado Grant, Survey 24, Block 16, 15 mi. SW of Hebbronville, dry, TD 2,720 ft.

San Patricio County: Fred M. Manning, Inc. 1 J. E. Thompson, Wm. R. Ray Sur., Abst. 337, Lot 5, of J. K. New Ranch Subd., 4 mi. N of Mathis, dry, TD 4,752 ft.

Starr County: Boyd & Galt 1 C. Ramos Est., Section 150, 20 mi. N of Roma, dry, TD 1,310 ft.

George R. Boyle 2 Loreto Canales, La Sacatosa Grant, 22 mi. N of Roma, dry, TD 1,600 ft.

Webb County: O. W. Killam 1 J. G. Garcia, Block 18, Survey 592, 3 mi. S of Mirando City, dry, TD 1,970 ft.

MICHIGAN

Two Oil Wells Added To Deep River Field

SAGINAW.—Michigan operators got seven producing wells for an initial potential of 4,478 bbl. a day while completing four dry holes, three of them wildcat tests, and preparing 14 new locations in 10 counties.

Arenac County's Deep River field provided the bulk of new production with two wells coming in for 75 and 100 bbl. an hour. Other ordinary wells for the fields were developed in Allegan, Bay. Missaukee, Montcalm and Roscommon counties. The producer in the Norwich-Missaukee pool, a Sun Oil Co. development in Section 15, was good for only 15 bbl. a day, after acidizing, plugging back to 4,485 ft. The three unsuccessful exploratory tests were in Gratiot, Isabella and Oceana counties.

The new drilling operations are scheduled in 10 counties, 3 in Isabella, 2 each in Allegan and Mecosta, the others in Arenac, Clare, Gratiot, Kent, Midland, Missaukee and Saginaw counties.

MICHIGAN WILDCAT FAILURES

Gratiot County, Fulton Township: Gordon Oil and Sohio Petroleum 1 Roberts, SE NW SE 13-9n-3w, dry in Dundee, TD 3,052 ft.

Isabella County, Lincoln Township: J. V. Wicklund Development 1 Smith, NW NW SW 29-13n-4w, dry in Dundee, TD 3,636 ft.

Oceana County, Benona Township: Carter 1 Neumann, NE SE NE 21-14n-18w, dry in Salina, TD 3,008 ft.

TEXAS GULF COAST

Trinity County Wildcat Flows Gas on Drill-Stem

HOUSTON.—Magnolia Petroleum Co. 2 Bolton, wildcat 3 miles west of Glendale, in Henry Bond League, Abstract 75, in Trinity County, is flowing an estimated 500,000 cu. ft. of gas through the drill-stem after perforating at 10,550-560 ft. Gas is almost dry, and operators are preparing to squeeze off, and make another test lower in the hole. Total depth is 12,505 ft. with 7-in. casing cemented at 10,642 ft.

Magnolia 1 Oscar Gibson, wildcat test in the C. Sanchez Survey, also in Trinity County, is coring ahead from 7,686 ft., with no shows reported.

In the Sugar Valley area of Matagorda County, Superior Oil Co. of California and John H. Blaffer 1 W. J. Culbertson, wildcat 5,000 ft. east-northeast of their 1 Peterson discovery well in Sugar Valley area, is being completed, and is flowing into pits cleaning through a ¼-in. choke with 2,500 lb. flowing pressure on the tubing. Total depth is 10,662 ft., and the 7-in. casing is set at 8,516 ft. Production is through perforations at 8,274-76 ft. Previous to the production test, a drill-stem operation was conducted through the perforations, using ⅝-in. top choke and a 12/64-in. bottom choke, the well flowed gas with a small amount of fluid, showing 2,900 lb. working pressure.

Superior announced a new location for the area, its 1 Sadie E. Thomasson, approximately 2,500 ft. northwest of the 1 Culbertson, and 5,000 ft. northeast of the 1 Peterson discovery. It is on a 166-acre tract in the P. Burnett and A. Sojourner Survey, Abstract 13.

Humble Oil & Refining Co. 16-Y Luther R. Sherrod, deep test in the Raccoon Bend field area of Austin County, in William C. White Survey, Abstract 101, is reaming core hole with total depth of 9,004 ft. in hard sandy shale. On drill-stem test last week at 8,786-8,801 ft. recovered 60 ft. of mud cut with oil and gas, no salt water.

Second well for the Hamel field, Colorado County, has been completed at Skelly Oil Co. and Warren Petroleum Corp. 1 Clara Berthold, a west-northwest offset to the 1 Hamel discovery well. This new well is in Richard Dowdy Survey, and flowed 242 bbl. of 38-gravity oil through a 3/16-in. choke with 1,485 lb. pressure on tubing, with casing on seal. Production is through perforations at 9,064-72 ft., with total depth

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9,562 ft. Sand showing oil was topped at 8,288 ft.

Humble 1 W. W. Moore, Jr., wildcat in the Bon Wier area of Newton County, in A. D. Stark Survey, 2½ miles southwest of Bon Wier townsite, flowed small heads showing only wash water with a small amount of gas through 78 perforations at 12,313-326 ft. The test is still cleaning.

The second well for Sabine Tram field in Newton County, Humble 2 E. C. Hankamer et al, ½ mile south-southeast of the 1 Hankamer discovery well, in Shearley Goodwin Survey, Abstract 5, flowed 117 bbl. daily through a ⅛-in. choke with 925 lb. tubing pressure, and a gas-oil ratio of 1,230 to 1. Well is still cleaning. Pipe was perforated with 13 shots at 8,001-04 ft. for the flow. Total depth is 8,908 ft. and the 5½-in. casing cemented at 8,147 ft.

There were 11 new locations reported this week with 2 being wildcats, 1 each in Harris and Montgomery counties. Of the 16 completions 8 were producers and 8 dry, 3 of which are wildcats, 2 in Jackson, 1 in Wharton counties.

UPPER GULF COAST WILDCAT FAILURES

Jackson County: Fred M. Manning, Inc. 1 Lola Gray et al, J. Mathis ¼ League, Abst. 50, 2 mi. S of Ganado, dry, TD 6,510 ft.

Monday Oil 1 Harry Sunter, 3 mi. SE of Edna, in W. J. E. Heard Survey, dry, TD 6,650 ft.

Wharton County: J. B. Ferguson and J. F. Hutchins 1 Leo Brod, 3½ mi. SE of Pierce, in I&GN Survey 33, dry, TD 5,660 ft.

ILLINOIS

White and Clay Counties Supply First New Pools

MATTOON. — Successful completion of wildcats in Clay and White counties during the past week officially opened the first new oil fields in Illinois in 1946. In Clay County, W. W. Shaffer 1 Wood, SE NW SE 21-5n-6e, pumped 8 bbl. of oil daily after a total acid treatment of 4,000 gal. Production is from the McClosky at 2,797-2,803 ft., total depth 2,806 ft. The new field opened by this well is approximately 4 miles east and slightly south of production in the Iola field.

The White County discovery was the Pure and Carter 1 E. B. Munsey, NE NE NW 8-6s-9e. The 1 Munsey, located midway between the Storms and Stokes fields, produced 169 bbl. of oil from the Hardinsburg sand at 2,552-61 ft. Originally drilled to 3,205 ft., the well was plugged back to 2,599 ft.

Another Clay County wildcat which shows good prospects of opening a new area is the Deep Rock Oil Co. 1 Ed Givens, NW NW SE 4-2n-6e, 3 miles southwest of Flora. The 1 Givens is cleaning out after an acid treatment of 4,000 gal. in the McClosky at 2,978-84 ft. Before acid the well swabbed at the rate of 211 bbl. of oil per day.

First reports for Illinois during the past week totaled 24. Six of these were located in the Mattoon area of Coles County and four in White County, while the remainder were scattered throughout the basin counties.

ILLINOIS SUCCESSFUL WILDCATS

Clay County: W. W. Shaffer 1 N. Wood, SE NW SE 21-5n-6e, pumped 8 bbl., 2,000 gal. acid, reacidized 2,000 gal., McClosky 2,797-2,803 ft., TD 2,806 ft.

White County: Pure and Carter 1 E. B. Munsey, NE NE NW 8-6s-9e, pumped 169 bbl., Hardinsburg sand 2,552-61 ft., TD 3,205 ft., PB 2,599 ft.

ILLINOIS WILDCAT FAILURES

Effingham County: F. J. Mitchell et al 1 H. Ruhall, SW SW SE 25-9n-6e, dry at 2,478 ft., Glen Dean 2,002 ft., Barlow

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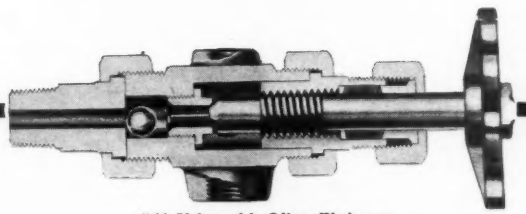

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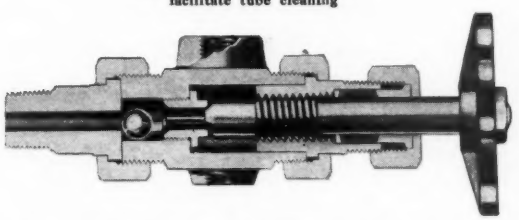

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lime 2,122 ft., Cypress sand 2,155 ft., Weiler 2,225 ft., Paint Creek sand 2,265 ft., Benoist sand 2,305 ft., Aux Vases sand 2,364 ft., St. Genevieve 2,419 ft.

Macoupin County: J. A. Gill 1 E. Hodges, NE NE NE 5-9n-7w, dry at 700 ft., no log.

Shelby County: T. B. Dirickson 1 Munson, NW SW SW 32-12n-6e, dry at 2,227 ft., Glen Dean 1,747 ft., Barlow lime 1,851 ft., Cypress sand 1,895 ft., Paint Creek lime 1,930 ft., Renault 2,018 ft., Aux Vases sand 2,028 ft., St. Genevieve 2,068 ft., Rosiclare 2,090 ft.

Garman & Belam 1 Gernenz, SW SW NW 9-9n-5e, dry at 2,156 ft., Glen Dean 1,660 ft., Barlow lime 1,768 ft., Cypress sand 1,795 ft., Weiler 1,820 ft., Paint Creek lime 1,883 ft., Paint Creek sand 1,920 ft., Benoist sand 1,948 ft., Aux Vases sand 1,987 ft., St. Genevieve 2,071 ft.

Wayne County: Nu-Enamel Corp. 1 C. A. Grubb, SE NE SE 21-1s-7e, dry at 3,325 ft. St. Genevieve 3,198 ft., Rosiclare 3,218 ft., Fredonia 3,262 ft., McClosky 3,269 ft.

KANSAS

Meade County Wildcat Gets Increase in Oil

STANOLIND OIL & GAS CO. 1 Adams, SW SW SW 7-35-29w, Meade County wildcat, is increasing its oil and decreasing its water. On the most recent test, operators pumped 9.69 bbl. of oil and ½ bbl. of water in 10 hours, as opposed to 4 bbl. of oil and 4 bbl. of water in a previous test. This well is 5 miles east of the 1 A. Adams, Meade County gas discovery, which had an initial of 88,000,000 cu. ft. gas.

North of the Hansen pool, Phillips County, Helmerich & Payne, Inc. 1 Bowman "A," NW NW SE 3-5-20w, is opening what may become an important new pool. After testing water in the Reagan sand, operators plugged back to the Arbuckle and perforated at 3,401-02 ft. The hole filled up at the rate of 5 bbl. per hour. Perforations were then made at 3,380-3,400 ft., and oil rose 1,800 ft. in 24 hours. Operators will acidize the Arbuckle.

Ed Adair et al 1 Sandstrum, NE NE NE 14-30-5e, a west extension to the Couch pool of Cowley County, flowed 30 bbl. of oil the first hour after shot. Tools are being run to knock out a bridge near the bottom.

Completions totaled 68 during the week, 36 of these being oil wells, 11 gas wells, and 21 dry holes. One oil wildcat was completed and 13 wildcat tries were dry.

KANSAS SUCCESSFUL WILDCAT

Butler County: Extension to Reynolds-Shaffer pool—S. & L. Drilling 1 Bettle, SW SW SW 4-27-6e, estimated 20 bbl. of oil per day from Viola at 3,145-54 ft. TD 3,154 ft. Mississippi lime 2,838 ft., Viola 3,145 ft.

KANSAS WILDCAT FAILURES

Barton County: Virginia Drilling 1 Lischesky, NE NE NE 11-19-13w, dry, TD 3,471 ft., Arbuckle 3,421 ft.

Ellis County: Fred Manning 1 Dreiling, SW SW SE 21-14-16w, dry, TD 3,448 ft., Arbuckle 3,380 ft.

Graham County: Royer & Farris 1 Holland, NW NW NW 25-8-22w, dry, TD 3,756 ft., Arbuckle 2,726 ft.

Gray County: E. F. Wakefield et al 1 Brubaker, SE NW SE 18-24-28w, dry, TD 4,953 ft., Mississippi lime 4,856 ft.

Kingham County: Cities Service Oil 1 Eck, SE SE NW 1-29-10w, dry, TD 4,724 ft., Arbuckle 4,694 ft.

Reno County: Plains Exploration 1 Updegrove, SW SW SW 21-22-9w, dry, TD 3,844 ft., Arbuckle 3,814 ft.

Rice County: B. C. W. Hyde, Jr., 1 Toesch, E/2 NW NE 26-20-10w, dry, TD 3,405 ft. Arbuckle 3,397 ft.

Tom Palmer 1 Benhnke, SE SW NE 36-18-10w, dry, TD 3,343 ft., Arbuckle 3,343 ft.

Riley County: Iseman et al 1 Gravenstene, NW NW NW 21-8-6e, dry, TD 2,702 ft., Pre-Cambrian 2,676 ft.

Russell County: Brunson Drilling et al 1 Dumler, SW SW NE 8-14-13w, dry, TD 3,379 ft., Arbuckle 3,357 ft.

Stafford County: Ed Swearer et al 1 Witt, SW SW NE 1-23-13w, dry, TD 3,840 ft., Arbuckle 3,803 ft.

Sumner County: Akin Oil et al 1 Stuart, NW NW SE 7-34-2w, dry, TD 4,566 ft., Simpson sand 4,558 ft.

Woodson County: Ira Nourse et al 1 Todd, SW NE SW 27-26-17e, dry, TD 2,240 ft., Arbuckle 1,465 ft.

NEBRASKA WILDCAT FAILURE

Dawes County: Amerada 1 Ostermeyer, SW NE SW 10-32n-52w, dry, TD 5,110 ft.

MISSISSIPPI

Fayette Field Test Flows Gas-Condensate

JACKSON.—Humble Oil & Refining Co. B-1 Smith, 1,975 ft. from the south line and 2,275 ft. from the west line of 16-9n-1e, in the Fayette field of Jefferson County, flowed 16 bbl. of condensate and 435,000 cu. ft. of gas in 24 hours. Perforations were made at 9,745-50 ft., with 2-in. tubing set to 9,684 ft. Gravity of the condensate was 63.5°. Operators are squeezing perforations after killing well.

The Langsdale field is getting a new pro-

Republic National Bank of Dallas

Statement of Condition December 31, 1945

RESOURCES

Loans and Discounts		$139,621,057.77
Banking House		1,915,000.00
Furniture and Fixtures		237,416.81
Real Estate for Bank Expansion		397,632.85
Stock in Federal Reserve Bank		600,000.00
U. S. Government Securities		91,798,510.83
Other Bonds and Securities		250,734.72
Cash and Due from Banks		92,851,565.02
Totals		$327,671,918.00

LIABILITIES

Capital	$ 10,000,000.00	
Surplus	10,000,000.00	$ 20,000,000.00
Undivided Profits		1,348,304.63
Reserve for Taxes, Etc.		1,151,892.17
DEPOSITS:		
Individual	$136,827,140.30	
Banks	99,739,319.12	
U. S. Government	68,605,261.78	305,171,721.20
Totals		$327,671,918.00

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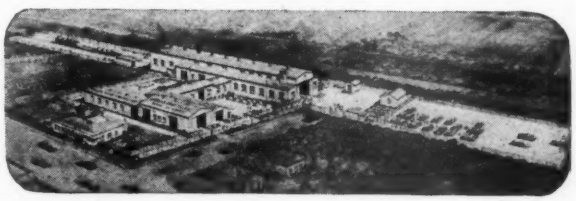

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DALLAS, TEXAS

ducer in the T. J. Conway Drilling Co. 2 Pippen, SW SE NW 29-1n-18e. After perforating at 3,778-88 ft., operators swabbed oil and mud. Tubing and rods have been run, and pump has been installed, and operators are waiting for storage.

Four wells were completed in the state this week, including two oil wells, and two dry holes, one of which was a wildcat. Three field locations have been announced, two for the Cranfield field of Adams County, and one for East Heidelberg field of Jasper County.

MISSISSIPPI WILDCAT FAILURE

Greene County: Humble 1 Waer, 660 ft. south and 960 ft. west of NE corner of SE 33-5n-8w, dry, TD 8,300 ft.

FLORIDA WILDCAT FAILURE

Bay County: Pure Oil 4 International Paper Co., 1,980 ft. north and 1,380 ft. east of SW corner of 8-3s-12w, dry, TD 4,960 ft.

OHIO, KENTUCKY

Richfield Pool Extended One Mile Northeast

COLUMBUS. — Industrial Gas Corp. 2 Florence Martin, Section 11, its third well in the northeast part of Deerfield Township, Morgan County, came in at 2,457,000 cu. ft., the largest open flow of the three wells. Clinton sand was found at 4,314-38 ft.

In the Canton area, Belden 1 V. H. Weaver, Section 30, Canton Township, Stark County, extends the Richville pool 1 mile to the northeast. Clinton sand at 4,613-41 ft. gaged 1,632,000 cu. ft. natural, and shut in after shot at 2,193,000 cu. ft.

Seven wells are drilling in the Bedford oil pool in Meigs County, and an additional 15 locations have been staked in preparation for a more active drilling program.

Twenty locations were reported for the week and 22 wells were completed with Lancaster field having 5 of each.

In the town of Stafford, Franklin Township, Monroe County, L. E. Smith 1 Ernest Curtin drilled 10 ft. into the Salt sand, topped at 935 ft., with a gage of 2,000,000 cu. ft.

OHIO WILDCAT FAILURES

Lorain County, Pittsfield Township: Hanley & Bird 1 Grant Pitts, Lot 93, Clinton 2,165-70 ft., 54,000 cu. ft., Trenton 3,550-4,139 ft., St. Petersburg 4,155-4,217 ft., 70,000 cu. ft., TD 4,230 ft.

Muskingum County, Monroe Township: S. E. Large 1 A. E. Sandel, Lot 17, Clinton 4,151-4,200 ft., show oil and gas, TD 4,294 ft.

EASTERN KENTUCKY

ASHLAND.—Operations during the week were extremely quiet, as far as gas or oil well completions were concerned.

One gas well on the property of Riley Reynolds, Floyd County, was being shot at total depth of 3,210 ft. and machines were being set on several other wells.

WESTERN KENTUCKY

OWENSBORO. — One of the important areas in Western Kentucky at the present time is the Dixie pool of Henderson County. Discovered last year, the pool already has 29 oil-producing wells and 3 gas wells. Drilling is under way at three wells and locations have been staked for five more. Production is from the Pennsylvanian gas sand at 1,040 ft. and the Cypress oil sand at 2,275 ft. Wells normally average from 100 to 300 bbl. daily on completion.

The Western Kentucky area was comparatively quiet during the past week with 10 reported completions. Of these three were unsuccessful wildcats all located in Muhlenberg County. Only two new tests were reported, one each for Davies and Henderson counties.

WESTERN KENTUCKY WILDCAT FAILURES

Muhlenberg County: B. Hackbusch et al 1 S. Yunker, 10-J-28, dry at 2,175 ft., Menard 1,280 ft., Viola 1,536 ft., Tar Springs 1,553 ft., Glen Dean 1,604 ft., Hardinsburg 1,703 ft., Golconda 1,765 ft., Barlow 1,852 ft., Renault 1,927 ft., Ste. Genevieve 2,050 ft., McClosky 2,164 ft.

B. Hackbusch 1 S. Yunker, 6-J-29, elev. 406 ft., dry at 2,348 ft., Menard 1,420 ft., Viola 1,628 ft., Glen Dean 1,680 ft., Hardinsburg 1,770 ft., Barlow 1,965 ft., Benoist 2,060 ft., Renault 2,082 ft., Ste. Genevieve 2,200 ft., McClosky 2,345 ft.

B. Hackbusch 3 S. Yunker, 17-J-29, elev. 419 ft., dry at 2,170 ft., Menard 1,280 ft., Viola 1,536 ft., Tar Springs 1,553 ft., Glen Dean 1,604 ft., Hardinsburg 1,703 ft., Golconda 1,765 ft., Barlow 1,852 ft., Renauld 1,927 ft., Ste. Genevieve 2,050 ft., McClosky 2,164 ft.

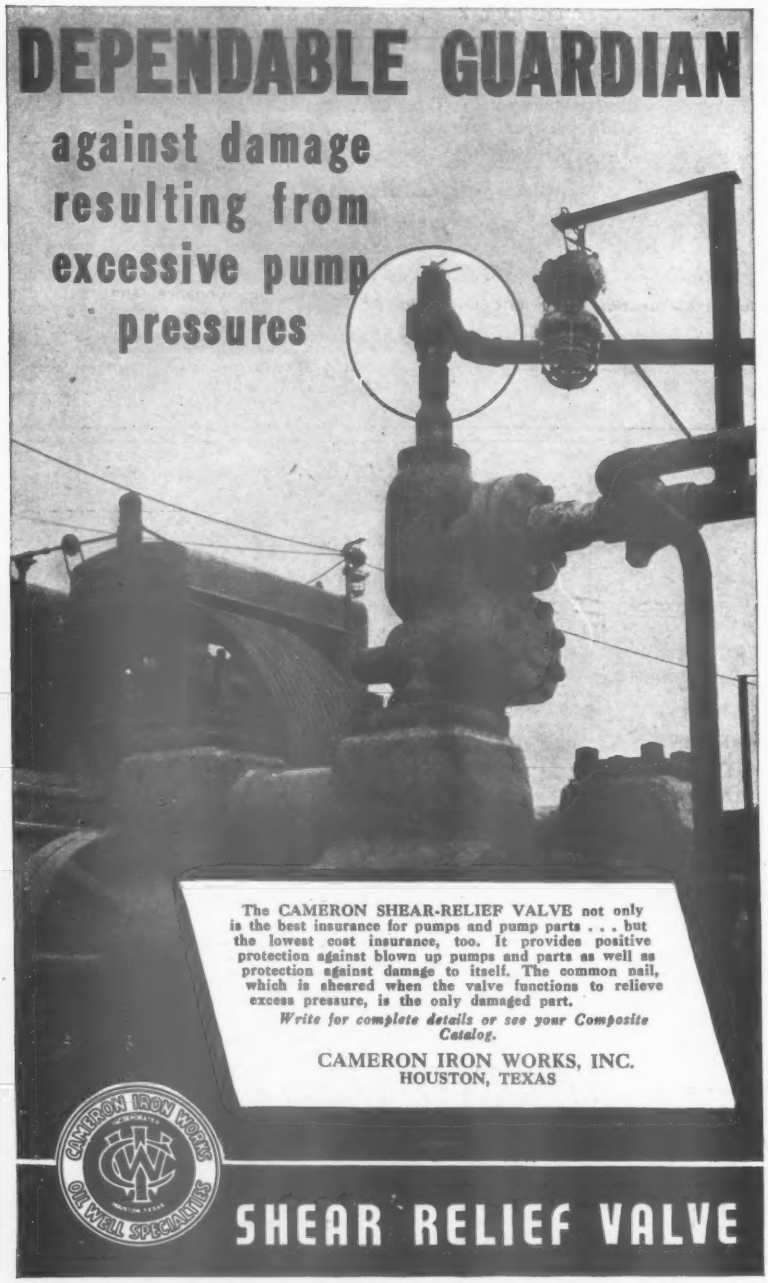
INDIANA

EVANSVILLE. — The North Owensville pool of Gibson County continued to hold the interest of Indiana operators during the past week. Two completions were reported which stretched the limits of the pool still further to the north. These were the Cherry & Kidd 1 Fannie Woodson, SE SW NW 19-2s-11w, completed for 600 bbl. of oil daily from the McClosky at 2,260-66 ft., and the Superior Oil Co. 1 Knowles, NE NW SW 19-2s-11w, completed for 273 bbl. of oil daily from the McClosky at 2,264-71 ft. Wells in the field normally average 250 to 900 bbl. per day on completion.

Total completions for the week amounted to seven, of which five were oil producers and two were failures. Drilling permits were issued for six wells, three each for Gibson and Posey counties.

INDIANA WILDCAT FAILURES

Posey County: S. C. Yingling 1 Duckworth, SW NW SW 26-7s-14w, elev. 371 ft., dry at 2,736 ft.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OKLAHOMA

Cimarron County Gets Second Oil Producer

THE Keyes area of Cimarron County is receiving renewed attention as a result of the near completion of Pure Oil Co. 1 Johnson, SW SW SE 12-5n-7e. Given an initial production test during the past week, the well produced 486 bbl. of oil the first day, 586 bbl. the second day and 467 bbl. the third day. Production is from the Cherokee sand of the Pennsylvanian formation and was found at 4,855-4,885 ft.

The 1 Johnson is the second oil well in the entire Oklahoma panhandle, the first being the Pure 1 Oklahoma State in SE SE NW 7-5n-8e, discovery well of the area. Two gas wells have been completed in the Keyes sector, and these are located 3 and 5 miles to the west and slightly south of the oil wells. In addition, three wells are now underway in widely separated sections of the area, and these are expected to considerably clarify the future prospects. They are the Pure 1 Sparkman, NE NE NE 3-5n-8e, drilling below 2,295 ft.; Pure 1 Jermyn, SW SW SW 18-5n-8e, drilling below 2,300 ft., and Pure 1 McCoy, NW NW NW 2-4n-8e, drilling at 1,011 ft.

Globe Oil & Refining Co. has apparently opened a new Cromwell sand pool in Seminole County with its 1 Davis & Patterson, SW SW NW 22-9n-7e, southeast of the Cheyarha pool. The well gaged 6,690,000 cu. ft. of gas through a 1-in. choke and flowed 10 bbl. of oil an hour. Total depth is 3,450 ft. When plug was drilled at 3,428 ft., the well flowed steadily with gas estimated at 8,000,000 cu. ft. Pay is at 3,428-50 ft., with casing set on top of the sand.

Skelly Oil Co. has found a new gas pool in the Yeager district of Hughes County with its 1 Price, SW NE NW 26-8n-10e. A drill-stem test of the Cromwell sand zone at 3,362-75 ft. showed gas in 2 minutes and the volume was estimated at 10,000,000 cu. ft. Tester is being pulled preparatory to setting casing.

OKLAHOMA SUCCESSFUL WILDCATS

Garvin County: New oil pool—Helmerich & Payne 4 Freeman "A," SE SE NW 24-1n-1w, flowed 122 bbl. from sand at 1,502-08 ft., TD 1,554 ft.

Marshall County: Extension to Aylesworth pool—Central Pipe Line 1 Aylesworth Unit, SW SW NW 20-6s-7e, flowed 336 bbl. from second Bromide sand, TD 3,220 ft., Viola 2,069 ft., Bromide dense 2,610 ft., second sand zone 3,083 ft.

Seminole County: New oil pool—Manahan Oil 1 Chambles, NW NW NW 13-8n-7e, pumped 25 bbl. from Booch at 3,142-54 ft., TD 3,164 ft., Booch 3,140 ft.

OKLAHOMA WILDCAT FAILURES

Carter County: Sohio 1 Speak, SW SE 33-2s-1w, dry, TD 4,923 ft.

J. D. Lewis & Spradlin 1 Boring, NW SE NW 33-4s-2w, dry, TD 2,620 ft. in sand.

Garfield County: Skelly and Sohio 1 Phillips, NE NE SW 3-20n-4w, dry, TD 4,746 ft., Layton 4,610 ft.

Garvin County: Schneider & Pennington 1 Pollock, SE SW SW 13-4n-3e, dry, TD 1,061 ft.

Jefferson County: W. H. Grant et al 1 Barrett, SW NE NE 17-6s-7w, dry, TD 4,774 ft., Arbuckle 4,607 ft.

Logan County: Harper Turner et al 1 Frendenberger, SW SW SE 9-17n-1w, dry, TD 5,435 ft., second Wilcox 5,416 ft.

McClain County: Pure 1 McCrumman "A," NE NE NE 33-5n-1w, dry, TD 6,890 ft., Oklahoma City 6,831 ft.

Pontotoc County: Reinhardt & Pennington 1 McKeel, SW SW NW 36-3n-4e, dry, TD 1,497 ft.

Seminole County: Globe Oil & Refining 1 Norvell, NE SW NW 20-7n-7e, dry, TD 2,340 ft.

Stephens County: Olson Orilling 1 McConnell, SW NE NE 28-2n-8w, dry, TD 5,500 ft. in sand.

E. P. Halliburton 1 Howell, SE SE SE 23-1n-7w, dry, TD 7,502 ft. in sand.

APPALACHIAN FIELD

New Gas Producer Found In Baileysville District

PITTSBURGH. — In Baileysville district, Wyoming County, southern West Virginia, where the new gas field is being developed, another good Berea gas well was completed in 1,278 W. M. Ritter Lumber Co., drilled by United Producing Co. It had a final open flow of 2,235,000 cu. ft. gas with the Big Lime topped at 2,579 ft.

In Hackers Valley district, Webster County, the wildcat of Tri-State Oil & Gas Co. on Hoover & Davis lease was considered uncommercial after drilling to 4,016 ft.

In Ripley district, Jackson County, Sycamore Gas Co. drilled a wildcat through the Oriskany sand on Susie Staats farm with a showing of 189,000 cu. ft. gas, natural, in that member. The Corniferous lime was topped at 4,674 ft., Oriskany 4,774-4,811 ft., total depth 4,838 ft. In Ravenswood district, United Carbon Co. has made a location for a test 1,348 J. H. Waskey starting at an elevation of 892 ft. and within the limits of the recent strike.

New locations announced during the week total 11 scattered in Otter district, Braxton County; Sherman district, Calhoun County; Ravenswood district, Jackson County; Elk district, Kanawha County; McKim district, Pleasants County; Curry district, Putnam County; Baileysville and Center districts, Wyoming County.

In North Strabane Township, Washington County, southwest Pennsylvania, Charles E. Young drilled through the Gantz sand in the test on Harry Hatfield farm (map Dr. S. A. Martin) with the Pittsburgh Coal logged at 555 ft., Gantz sand topped at 2,397 ft. There was about one bailer of oil every screw or about 3 hours in the Gantz sand.

New locations totaled 10 in southwest Pennsylvania, scattered in Cowanshannock, Plum Creek and Red Bank townships, Armstrong County; Monroe Township, Clarion County; Jefferson Township, Greene County; Beaver Township, Jefferson County, and North Strabane Township, Washington County.

LA.-ARK.

Franklin Parish Wildcat Flows 40 Bbl. in 8 Hours

SHREVEPORT.—Three miles south of the new Big Creek field of Richland Parish, Franklin Parish is getting a new pool. Gus K. Primos and C. W. Sharp 1 Butler, SW NW 20-16n-8e, flowed 40 bbl. of oil in 8 hours by heads. Production is coming from perforations at 3,525-40 ft.

Just northeast of the Champagnolle field of Union County, Arkansas, Atlantic Refining Co. and Placid Oil Co. 1 Goods, NW 6-17s-13w, plugged back to 5,657 ft. and swabbed 25 bbl. of oil and 100 bbl. of salt water per day. Operators plan to put the well on pump.

NORTH LOUISIANA SUCCESSFUL WILDCAT

Natchitoches Parish: M. T. Halbouty 1 Detro, 2,060 ft. north and 2,077 ft. west of SE corner of 1-13n-8w, 102 bbl. from Eagleford at 3,288-94 ft., TD 3,299 ft.

NORTH LOUISIANA WILDCAT FAILURE

Bossier Parish: Big West Drilling 1 Continental American Bank, SW NE 23-19n-11w, dry, TD 5,982 ft.

ROCKY MOUNTAIN

Baxter Basin Test Finds Gas in Tensleep

DENVER. — Transcal Petroleum Corp. 2 Union Pacific, SE NE 11-19n-104w, North Baxter Basin, a test to the Tensleep, topped that formation at 6,152 ft., drilled to 6,197 ft., and then cored from 6,197 to 6,205 ft., and obtained a full recovery of slightly porous sand. A drill-stem test at 6,189-6,209 ft., the latter being the total depth, open 30 minutes, flowed gas at the rate of 6,115,000 cu. ft. per day, no oil show and less than 5 ft. of sulfur water. It will deepen 15 ft. more into the sand and test again.

Saturation in Tensleep at Bailey. — Sinclair-Wyoming Oil Co. 3 unit, NW NE NE 21-26n-89w, Bailey Dome, Carbon County, Wyoming, test to the Tensleep, topped that formation at 6,954 ft., drilled to 7,320 ft., and is testing. Fluid level was 4,560 ft. and after standing for 5 hours, it rose to 6,500 ft. It was then swabbed and 18 bbl. of oil and 13 bbl. of water were recovered. Best test so far reported was that it swabbed 57 bbl. of oil and 5 bbl. of water in 6 hours. The water appears to be coming from the bottom. If successfully completed, it will be a discovery in a new pay. Same company's 1 Coffman, SE NE NE of 21, spudded in 1944 to go to the Tensleep. It was a discovery in the Sundance last year at 5,234 ft. and was completed for 381 bbl. natural in 16 hours. A second well also was completed in the Sundance, and the third is testing the original objective.

East extension for Rangely.—Phillips Petroleum Co. 1 Levison, SE SE 27-2n-102w, Rangely field, was completed at 6,416 ft. for 279 bbl. per day through choke. It had the top of the Weber at 5,806 ft. It is an outpost well on the east, 1¼ miles east of California Co. 11 fee, which made 507 bbl. natural through ¼-in. choke without being shot. The Phillips well had the top of the Weber at approximately 486 ft. below sea level, or only 118 ft. lower than the California 11 fee 1¼ miles to the west.

New operations.—Sixteen new operations were reported, of which six were in Colorado, three in Wyoming, and seven in Montana. The Colorado locations are all in the Rangely field, three by Stanolind Oil & Gas Co., two by Phillips Petroleum Co., and one by California Co. The Wyoming locations were: Continental Oil Co. at South Elk Basin, Mountain Fuel Supply Co., in Middle Baxter Basin, and 1 H. D. Moore, a wildcat in 1-34-65, south of the Lance Creek field. Two of the seven locations in Montana were in the Cat Creek field, one by Continental, an outpost on the north, and one by V. M. Kirk, an east offset to 5 O'Dea, recently completed for 1,200 bbl. initial. Carter Oil Co. made one location in Cut Bank, and Montana-Dakota Utilities Co. spotted a shallow gas well at Cedar Creek. The Bannatyne Oil Syndicate made a location for a Devonian test in the old Bannatyne field in Choteau County in 1 Speer, NW NW SE 5-25-1e. Brundage 1 King, SW SW 35-14-25e, Flatwillow district, Petroleum County, a wildcat, is spudding, and R. C. Tarrant is rigging up for a wildcat in SW NE NW 28-9n-12e, Daisy Dean structure, Wheatland County.

Completions. — Seven wells were completed, of which six were oil wells with initial production of 2,012 bbl., and one was a dry hole. Four of the oil wells, with initial production of 1,793 bbl., were in the Rangely field in Colorado, and two for 219 bbl. were in Cut Bank and Pondera fields in Montana. The dry hole was in South La Barge, the only completion in Wyoming.

WYOMING WILDCAT FAILURE

South La Barge, Lincoln County: Joe Minton 1 Government, SW SW NE 20-26n-113w, TD 2,503 ft., dry.

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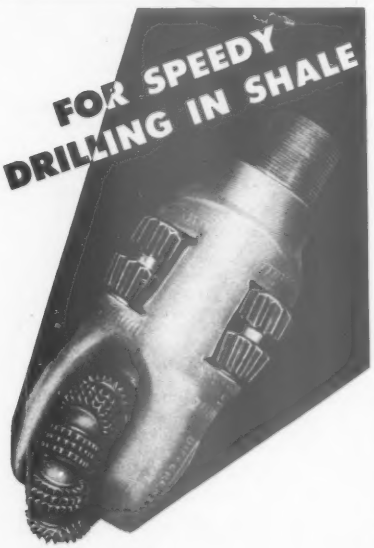

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Among the

Drilling Contractors

I. F. Scott is the contractor for Ray C. Andres 1 Seaman and Smead, NW NW NE 29-11n-4w, a wildcat in Gratiot County, Michigan.

Calvert & Willis Co., Olney, Ill., has begun work on its first contract this week, J. J. Lynn 1 Smith, 21-1s-7e, in Wayne County, Illinois. The company was formed by Allen Calvert, Olney attorney, and Walter W. Willis, former drilling superintendent for Pure Oil Co.

A. W. Hutchings Drilling Co. has the contract for Mid-States Oil Corp. 2 Herrington, 330 ft. south and west of NE cor. NW NW 35-1n-12e, in the West Heidelberg field of Jasper County, Mississippi.

Harry Stroud will drill Eric P. Schelling 2 Graczyk, NW SW NW 30-4n-12w, in the Dorr field of Allegan County, Michigan.

N. V. Duncan, Fairfield, Ill., has the contract for Phillips Petroleum Co. 4 Mattoon, NW SE NE 22-12n-7e, in Coles County, Illinois.

Johnston & Parks Drilling Co. will drill Cities Service Oil Co. 1 Luster, NW SW 35-14n-2e, a wildcat in Holmes County, Mississippi.

B. M. Heath is the contractor for C. A. Lynch et al 4 Vail, 600 ft. from the north line and 690 ft. from the west line of NW NW 23-5s-14w, in Posey County, Indiana.

C. E. Brehm is the contractor for Deep Rock Oil Corp. 1 Emory, 480 ft. from the west line and 330 ft. from the north line of SE SW 4-2n-6e, in Clay County, Illinois.

Turner Drilling Co. has the contract for Cities Service Oil Co. 1 McNier, SE SE SE 11-12n-1e, a wildcat in Saginaw County, Michigan.

G. P. Shoultz, Francisco, Ind., will drill the R. D. Brown, Inc. 6 Shoultz, 1,716 ft. from the south line and 396 ft. from the east line of NE SE 18-1s-9w, in Gibson County, Indiana.

Turner Drilling Co. will drill Cities Service Oil Co. 1 McCartney, NW NW SW 6-15n-2w, a wildcat in Midland County, Michigan.

Voorhees Drilling Co. will drill Welsh Oil Co. 1 Robinson, NW NW SW 24-19n-4e, in the Deep River field of Arenac County, Michigan.

Mabee Oil & Gas Co. will drill the Olds Oil Co. 1 Warnock, 948 ft. from the north line and 520 ft. from the east line of NE SE 6-2s-10w, in Gibson County, Indiana.

Perry, Busk & Ormiston will drill Carl E. Grimes 1 Lemunyon, NE NE NE 8-9n-11w, a wildcat in Kent County, Michigan.

N. V. Duncan, Fairfield, Ill., is drilling the Pure Oil Co. 5 McKnight, W½ NW SE 9-6n-10e, in Jasper County, Illinois.

Lupher Drilling Co. will drill two wells in the Coldwater field of Isabella County, Michigan. They are Sohio Petroleum 1 Durkee, N½ NE SE 31-16n-6w, and Sohio Petroleum Co. 1 Dent, N½ NE NW 5-15n-6w.

E. F. Moran, Evansville, Ind., is the contractor for Sinclair-Wyoming Oil Co. 11 Elliott, 1,200 ft. from the north line and 300 ft. from the west line of NW SW 14-5s-14w, Posey County, Indiana.

Turner Drilling Co. will drill Cities Service Oil Co. 1 State, N½ SW SE 32-16n-6w, in the Coldwater field of Isabella County, Michigan.

Hess Drilling Co. has the contract for Ashland Oil & Refining Co. 1

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TUBING PROTECTORS
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Henry, NE SW SE 10-12n-7e, in Coles County, Illinois.

Turner Drilling Corp. has the contract for Pure Oil Co. 1 Sanford, N½ NW SW 7-18n-4w, in the Harrison field of Clare County, Michigan.

CALENDAR

January

FPC regional hearing in natural-gas investigation, Court House Building, Houston, January 28.

Independent Natural Gas Association of America, annual membership meeting, Texas State Hotel, Houston, January 28.

February

American Welding Society, national meeting, Hotel Cleveland, Cleveland, February 4-7.

Iron and Steel and Institute of Metals divisions, American Institute of Mining and Metallurgical Engineers, national meeting, Statler Hotel, Cleveland, February 4-8.

American Society for Metals, annual convention (postponed from 1945), Statler Hotel, Cleveland, February 4-8.

A. G. A. Gas Production Research Committee, Headquarters, February 7.

FPC regional hearing in natural-gas investigation, Buena Vista Hotel, Biloxi, Miss., February 11.

FPC regional hearing in natural-gas investigation, Chicago, February 19.

American Society for Testing Materials, spring meeting, Pittsburgh, February 25-March 1.

Exposition of Chemical Industries, twentieth exposition, Grand Central Palace, New York, February 25-March 2.

March

Southern California Meter Association, nineteenth annual Hi-Jinks, Long Beach, Calif., March 2.

Oklahoma Utilities Association, annual convention, Biltmore Hotel, Oklahoma City, March 11-12.

FPC regional hearing in natural-gas investigation, Charleston, W. Va., March 19.

Southern Gas Association, annual convention, Galveston, March 21-22.

Western Petroleum Refiners Association, annual meeting, Blackstone Hotel, Fort Worth, March 25-27.

April

American Association of Petroleum Geologists, annual meeting, Stevens Hotel Chicago, April 2-4.

Natural Gasoline Association of America annual convention, Baker Hotel, Dallas April 17-19.

National Petroleum Association, semiannual meeting, Hotel Cleveland, Cleveland Ohio, April 18-19.

Southwestern Gas Measurement Short Course, Norman, Okla., April 23-25.

Independent Petroleum Association of America, midyear meeting, Houston, April 29-May 1.

May

Pennsylvania Gas Association, Galen Hall Wernersville, Pa., May 7-9.

Natural Gas Department, American Gas Association, annual spring meeting, Hotel Gibson, Cincinnati, May 7-8.

National Association of Corrosion Engineers, annual meeting, President Hotel Kansas City, Mo., May 7-9.

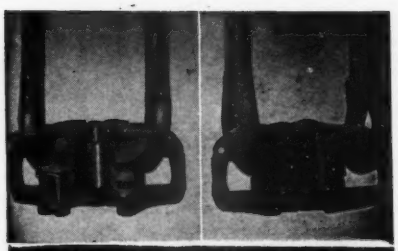
June

American Society for Testing Materials annual meeting, Buffalo, June 24-28.

1947

May

International Petroleum Exposition, Tulsa May 17-24.



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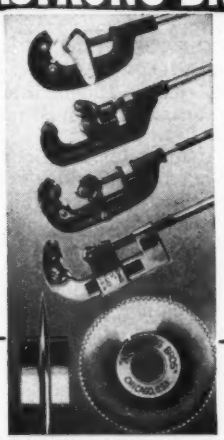

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PERSONALS

New Sinclair Head Had Held Other Major Posts

IMPORTANT posts in the Sinclair companies were committed to George H. Taber, Jr., before he was advanced to president of Sinclair Refining Co. He entered Sinclair service in 1917 and before long he was on his way up. In turn he became manager of the natural-gasoline department, vice president Sinclair Oil & Gas Co., president Sinclair Crude Oil Purchasing Co., and since 1923 vice president in charge of refining operations for Sinclair Refining Co.

Born in Franklin, Pa., in 1890, Taber attended the public schools in Philadelphia and Pittsburgh, and in 1911 he received his B.S. in mechanical engineering from University of Pennsylvania. Two years later he was awarded his master's degree in chemical engineering at Massachusetts Institute of Technology. He has developed and patented many improvements in the field of petroleum refining.

Harry Maupin has been appointed traffic manager of Pan American Petroleum & Transport Co., succeeding **John S. Wood.** Wood was honored at a testimonial dinner at New York's Hotel Biltmore by members of New York Traffic Club.

Ralston P. Edmunds, who was a member of the legal staff of The Carter Oil Co. in Tulsa, has left to join Creole Petroleum Corp. as an attorney at Caracas, Venezuela. Edmunds, a University of California graduate, recently returned from service as an attorney for Petroleum Administration for War.

Thomas F. Reagan, superintendent of The Texas Pipe Line Co., Oklahoma division, and Kaw Pipe Line Co., has retired after 35 years' service. In 1912 he drove the first Ford car owned by Texas Pipe Line.

M. C. Brunner has rejoined Shell Oil Co., Inc. as administrative assistant for the Texas-Gulf area in the office of the vice president in Houston. Brunner, discharged from Army service with the rank of colonel, held a similar post in the Houston office of the exploration department when he entered the Army 4 years ago. He is a graduate of California Institute of Technology and has been with Shell since 1926.

Lt. M. W. Sublett, recently discharged from the Army Air Corps, has replaced **J. T. Perkins** as head of the crude-oil purchasing department in Tulsa for Sohio Petroleum Co. Before he entered war service Sublett was scout and field representative for Sohio in the Illinois, Indiana, and Kentucky district. Perkins has opened a new crude-oil purchasing office for the company in Dallas.

Donald L. Wright, petroleum attache with the U. S. Embassy in London since 1943, has rejoined Standard Oil Co. (New Jersey) in the marketing council division. A Lehigh University graduate, Wright participated in operation of the first hydrogenation plant in the United States at Jersey's Bayway refinery. In 1943 he was named an industrial-lubricant specialist.

Maj. Milton K. McLeod, recently released from Army service, has been named assistant manager of Coordinating Research Council, Inc., a new office created by the board of directors. Major McLeod, before joining the Army, was active in various groups of the council and, as an officer in the Army Air Forces, represented the Air Technical Service Command on research projects in which the AAF had a direct interest. He is a graduate of Massachusetts Institute of Technology.

Lt. Col. Stanley Wilk, formerly in the research and development department of Atlantic Refining Co. in Philadelphia, has joined Polymer Corp., Sarnia, Ont., as assistant to the managing director. Colonel Wilk had been with the refining division of Petroleum Administration for War since July 1942.

Jack D. Reardon, traffic manager of Union Oil Co. of California, has been elected a member of the board of directors of the Los Angeles Traffic Managers and will have charge of the educational program for 1946.

J. L. Allinson, formerly vice president of Lion Oil Refining Co., El Dorado, Ark., has been elected vice president of J. A. Jones Construction Co., Inc., Charlotte, N. C., which has opened in Houston the office of its petroleum and chemical division. **Gordon T. Granger,** formerly refinery manager for Barco Oil Co. at its Corpus Christi plant, is manager of the new division. During the war Allinson was chief resident engineer of the atomic bomb project, at Oak Ridge, Tenn. Granger was director of refining in District 3, Petroleum Administration for War, Houston.

W. K. Warren, president of Warren Petroleum Corp.; **J. A. LaFortune,** executive vice president, and **J. A. Mabee,** president of Mabee Oil & Gas Corp., were among 21 leaders in civic activities accorded recognition by the Tulsa Chamber of Commerce last week for "service to their city and community during 1945." The tribute to Warren was for his leadership in the University of Tulsa's $5,000,000 expansion program; to LaFortune "for outstanding contribution of personal effort" toward financing of the Memorial Athletic Dormitory at the university; to Mabee, for his gift to the university of the John Mabee Hall for Men.

Bert M. Brush, The Carter Oil Co., has been elected president of Rocky Mountain Oil Scouts Association for the coming year. **David W. Sharp,** Atlantic Refining Co., is the new vice president; **Charles E. Titus,** Sinclair Wyoming Oil Co., secretary-treasurer; **Hal C. Walker,** The Ohio Oil Co., ed-

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itor-in-chief. The new editorial committee includes **Don R. Ryan,** Standard Oil Co. (Ind.), **Orval E. Heck,** Continental Oil Co., and **S. A. McChesney,** Phillips Petroleum Co.

H. E. Bovay, Jr., for 8 years mechanical engineer for Humble Oil & Refining Co. at its Baytown plant, has opened an office in Houston as engineering consultant. During 1943 Bovay was senior materials analyst for Petroleum Administration for War, setting up a uniform system for handling petroleum construction projects. He is a Cornell University graduate.

Robert S. Hatch has been named manager of The Texas Co.'s purchasing department, New York, succeeding **Greer W. Orton,** who became assistant to the president, **Harry T. Klein.** Hatch has been with Texas since 1927, following his graduation from Massachusetts Institute of Technology with a degree in civil engineering.

Charles N. McKinney, former regional press and radio officer for the Office of Price Administration, with headquarters in Dallas, is a new member of the public relations staff of the Carter Oil Co. in Tulsa. He is a graduate of University of Oklahoma.

Van S. Welch, Artesia, has been named president of the New Mexico Oil and Gas Association. Other officers are **Emery Carper,** Artesia, and **Harry Leonard,** Roswell, vice presidents, and **Hugh L. Sawyers,** Roswell, executive secretary.

A. A. Curtice, vice president of the United Engineering Corp., S. A., has been made petroleum adviser to the Peruvian Government. **Glen M. Ruby,** another United vice president, and **A. D. Small,** the corporation's chief petroleum engineer, left the United States January 20 for Tokyo and Shanghai to conduct exploratory work for the National Resources Commission of China.

Dan W. Cameron, division scout for the Carter Oil Co. at Mattoon, Ill., at the time he entered the Seabees in 1942, has returned to the company as division scout for the Central division, with headquarters in Oklahoma City.

Frank J. Billbe has been appointed manager of Oklahoma Natural Gas Co. in Bristow, Okla., to succeed **J. A. Whitcomb.** He formerly was in the company's operating department in Oklahoma City.

Paul M. Buttermore, who was a geologist in the production division of Petroleum Administration for War and before that an independent operator in Michigan, has joined the geological staff of Danciger Oil & Refining Co., with headquarters in Fort Worth.

DIRT WON'T BURN! *Why put it in your engine?*

SECO GAS-KLEEN SCRUBBER TANK

This SECO GAS-KLEEN SCRUBBER and VOLUME TANK will remove all dirt, grit, oil and water from field gas, and will also provide an even flow of gas to the engine carburetor. Prolong engine service life—reduce maintenance costs and "down time" by using a SECO SCRUBBER.

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here's a way to chop down Christmas tree bulk and weight in 6,000- 10,000- and 15,000 pounds test

Here's something new—and better—in Christmas tree assemblies: a pre-tested unit embodying all necessary wing fittings. Put a master valve and tubing head below this manifold and you have a complete Christmas tree.

Most noteworthy departure from ordinary Christmas tree wings is the use of UNIBOLT Adjustable Chokes as wing valves. The 1-inch opening in the UNIBOLT Adjustable Choke is ample to assure low velocity flow through the wing of high pressure trees, as the well flow is usually through a small orifice in the positive bean. The adjustable choke is used as an angle valve, in full open or closed position only.

The UNIBOLT fitting on top of the tree simplifies running pressure bombs or paraffin scrapers and can be provided flanged or threaded in any size combination required. The rest of the assembly is 2-inch.

Interchangeable parts, replaceable seat and stems, assure long, low-cost operation. All parts shown will interchange with standard UNIBOLT fittings.

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THE ONE BOLT COUPLING

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Equipment Men in News

E. M. Burk has been appointed traffic manager of Wyatt Metal & Boiler Works with headquarters at the Houston offices. **J. S. Gowdy**, for the past 38 months with the Seabees, has returned to Wyatt at Houston to become purchasing agent. He replaces **C. L. Williams** who has left the company to enter business for himself.

Ernest J. Gottfried, a member of the Fawick Airflex organization of Cleveland, has been appointed service manager for the company. Gottfried is a former test engineer with General Motors Diesel Engine Division, and has recently returned from Russia where he spent 18 months with the Russian Navy, installing Fawick clutch equipped G. M. diesels in naval craft.

Establishment of a new labor-relations department at Caterpillar Tractor Co. is announced by **L. B. Neumiller**, president. The programs of the labor relations and industrial relations departments will be administered by **Ralph M. Monk**, who assumes the title of director of industrial and labor relations. **George W. Torrence** has been appointed manager of the new labor relations department and **Warren Kinsey** has been named industrial relations manager.

McEvoy Co. announces the appointment of **T. J. (Buck) Buchanan** as sales representative in West Texas and New Mexico. Buchanan has had wide experience as roughneck, tool-pusher and driller, and is thoroughly familiar with problems encountered in the field.

Bruce A. Irwin has been appointed sales manager of Hammel-Dahl Co. of Providence, R. I., manufacturer of automatic control equipment. During the war years he was secretary of Petroleum Administration for War's materials coordinating committee.

Following 5 years of military service, including more than 2 years overseas duty as officer of an antiaircraft battalion in the European theater, **Lewis L. Dollinger, Jr.**, has received his discharge and is again associated with Dollinger Corp. In addition to duties connected with his recent election as vice president he will act in a sales engineering capacity.

Addison F. Vars, president of Sterling Engine Co., announces that **Robert E. Dillon** has been elected to the board of directors. In addition to his directorship in Sterling Engine Co., Dillon is also president and general manager of Lake Erie Engineering Corp., director of the Marine Trust Co., Air Investors, Inc., of New York City, and other financial and manufacturing companies.

Announcement is made by **C. T. Ruhf**, president of Mack Manufacturing Corp., of the election by the board of directors of **W. M. Walworth** as vice president and chief engineer. Mr. Walworth has been acting chief engineer since March 1945.

Moulton Harrison, of Lufkin Foundry & Machine Co. before enlistment into the U. S. Army, has returned to active service with the company at his old post in charge of the Corpus Christi, Tex., branch.

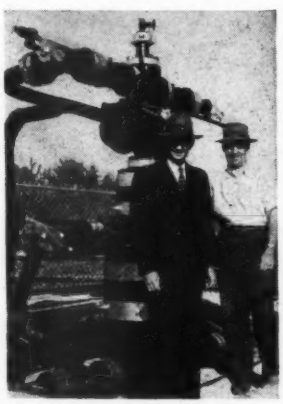
To stimulate undergraduate interest in welding, funds have been donated by **A. F. Davis**, of Lincoln Electric Co., for the A. F. Davis Undergraduate Welding Award, which will consist of four cash prizes totaling $700 to be presented annually to authors and publications for the best and second best articles on welding published in undergraduate magazines or papers during the preceding year. Judges selected by the educational committee of the American Welding Society will select the winning paper in July of each year on the basis of originality of the paper and thoroughness in which the subject is covered. The awards will be as follows: $200 each to the author of the best paper and to the publication in which it appears, and $150 each to the author and the publication for the second best paper.

Dudley C. Sharp has recently returned to assume the duties of president of Mission Manufacturing Co., having served in the U. S. Navy with the rank of lieutenant. At the annual meeting of the directors of the company, the following officers were elected: **W. B. Sharp**, chairman; **D. C. Sharp**, president; **W. T. Campbell**, executive vice president; **Ed Prather**, vice president and treasurer; **A. M. Foute**, secretary.

Appointment of **Bingham H. Van Dyke** as manager of the new products department has been announced by Elliott Co., Jeannette, Pa. Previously assistant to the director of research and development, Van Dyke came to Elliott from the War Production Board where he was deputy chief of the heat-exchanger and pressure-vessel branch.

C. F. "Cy" Johnson has joined Watson-Stillman Co., Roselle, N. J., where he is in charge of all engineering in the forged steel fitting and the bronze and forged steel valve divisions. He will also function as a representative in contacting the trade.

Gerald J. Slade has been appointed advertising manager of Hewitt Rubber Corp. For the past 2 years Slade has been with B. F. Goodrich Co. in Akron, where his principal responsibilities were merchandising research and advertising media analysis.



A. J. Penick, recently elected chairman of the board of directors, Oil Center Tool Co., Houston, takes a keen interest in watching his company's equipment perform in the field. On a recent trip to the Lake Creek, Texas, field to observe triple-completion operations which utilize a new style heavy-duty packer and surface equipment of his own design, Penick posed with Oil Center sales engineer, Ace Elliott, in the shadow of a big 10,000-lb. test O-C-T tree.

T. J. BUCHANAN

B. A. IRWIN

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FOR SALE OR RENT: 12,000 Ft. of 4½" Drill Pipe. Rental 1c per foot per day. Melton Supply, Seminole, Oklahoma.

FOR SALE: One 94' L. C. Moore mast with substructure. One 7¼" x 12" Gardner-Denver Pump suction and sheave. Roy R. Powers, Box 560, Casper, Wyoming.

FOR SALE: New Valves, Attractively Priced; two 14" Hanlon-Waters Motor valves type 86R; one 14" H-W Butterfly valve; Iron & steel safety and relief valves, sizes 1" to 6"; 600# steel globe valves sizes ½" to 2"; Expert instrument repair service. Valve & Instrument Service Co., 2802 Fernwood Ave., Dallas. Phone Winfield 5091.

FOR SALE: 15,000' of 7" O.D., 24#, Range 2, 10 thread seamless Casing. The Chase Company, Chase, Kansas.

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30 Used 3½-4 Ton Model CU Four-Wheel Drive Trucks. Wheelbase 148". SRS or SRK Waukesha Engines. 5 Speed Transmission with PTO. 11:00 x 20 tires, duals rear. Ideal for well servicing units and other applications.

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Our Price..... $2.25 Per Foot

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at Salem, Illinois, a complete Natural Gasoline Oil Absorption Plant with fractionating equipment to process Butane, Iso-Butane and Propane.

Absorber capacity 40,000 M.C.F. of wet gas daily at 80# pressure.

Has 13—230 H.P. Type 10 Horizontal Bessemer Gas Engine and 1—230 H.P. Horizontal Clark direct connected to cylinders size for capacity to handle 15,000 M.C.F. of gas daily from 10" vacuum to 75# pressure.

Plant distillation and fractionating equipment designed for 125,000 gallons liquid capacity. Ample storage for all products.

Steam Power Plant consists of 8—125 H.P. 225# W. P. Oilfield Type Boilers that will pass Hartford test.

This entire plant is intact and all equipment is in A-1 condition. Will sell only as a complete unit.

ENGLE PETROLEUM, INCORPORATED
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EQUIPMENT FOR SALE

FOR SALE: No. 3' National Drilling Machine, steel mast and steel sills—145 H.P. Hercules Diesel Drilling motor with Young reverse clutch—motor rebuilt—new sleeves, pistons, bearings, rebuilt crank shaft—A-1 condition. Price $5,000. Carper Drilling Company, Artesia, New Mexico.

FOR SALE: 2 RXIV Le Roi 8 Cylinder 6¾"x7" 225 HP. Engines completely overhauled with starting engines with or without twin disc clutches. Jack Gwynn Company, Ltd., Phone 6196, Wichita Falls, Texas.

CABLE DRILLING TOOLS: Complete line of drilling and fishing tools, supplies, lines, bits, casing, elevators and lease equipment. Orders filled promptly. Degen Pipe & Supply Company, Box 107, Red Fork Station, Tulsa, Oklahoma.

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FOR SALE: One Wilson Super double drum Spudder complete with all necessary tools for drilling in. Price $6,500. Inquire J. F. Dietz, Box 42, McLeansboro, Illinois.

FOR SALE: One used Wilson Master Pulling Unit with Overhead Cathead Shaft, powered by PA-50 International Engine. Located at Shawnee, Oklahoma. A Real Bargain. **LUCEY PRODUCTS CORPORATION, Tulsa, Oklahoma.**

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As is, where is, one 48" O.D. x 100 ft. 60 tray fractionating column, complete with reboiler, 72" x 19' 10" feed tank, 72" x 12' reflux accumulator, column heat exchangers, Griscom-Russell and Coynco atmospheric condensing sections, Brown Air-O-Line control instruments and valves, close clearance pumps, relief valves and piping, etc. All equipment purchased new in 1942 and in excellent condition. Column installation formerly used for isobutane splitting. Inventory of equipment and detailed drawings will be furnished on request.

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10—5000 Bbl. Black, Sivalls & Bryson Bolted Tanks, 24'1½" high x 38'7⅝" diameter, 3 rings, 1st ring 7 gauge, balance of tank 10 gauge, complete with bolts, gaskets, wrenches for erection — crated for export — FOB Ogden, Utah — Immediate delivery.

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FOR SALE: 5,000' 4½" OD 16.60# Range 2 drill pipe with regular tool joints; 6,100 4½" OD 16.60# Range 2 drill pipe with A.P.I. F.H. tool joints. Also 1 steel drilling rig complete with boilers and drill pipe capable of drilling 6,000'. 7 Nixon Gas Lifts complete with weights, lifts and line. Wire write or phone Louisiana Iron & Supply Co Shreveport, La.

FOR SALE: 2 — Model R L Cardwell double drum spudders, extra good condition. Write P.O. Box 210, Lyons, Kansas Phone 625, Lyons, Kansas.

2—U-495 Climax 12 cylinder Gas Engines, slightly used but rebuilt and with new engine guarantee at reduced prices.
1—Compound Drive for two large engines complete with Vee Belts, engine skids and all rotating elements. New.
1—90 Horse Power IA-6 Superior Diesel Cable Tool Drilling Engine, overhauled and guaranteed.
1—BIW model 75 unitized steam drawworks with water cooled rims and heavy chain guards. New.
3900'—4½" OD Drill Pipe with shrink thread National joints. Excellent condition.

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HOT ROLLED SEAMLESS
MECHANICAL BLACK TUBING

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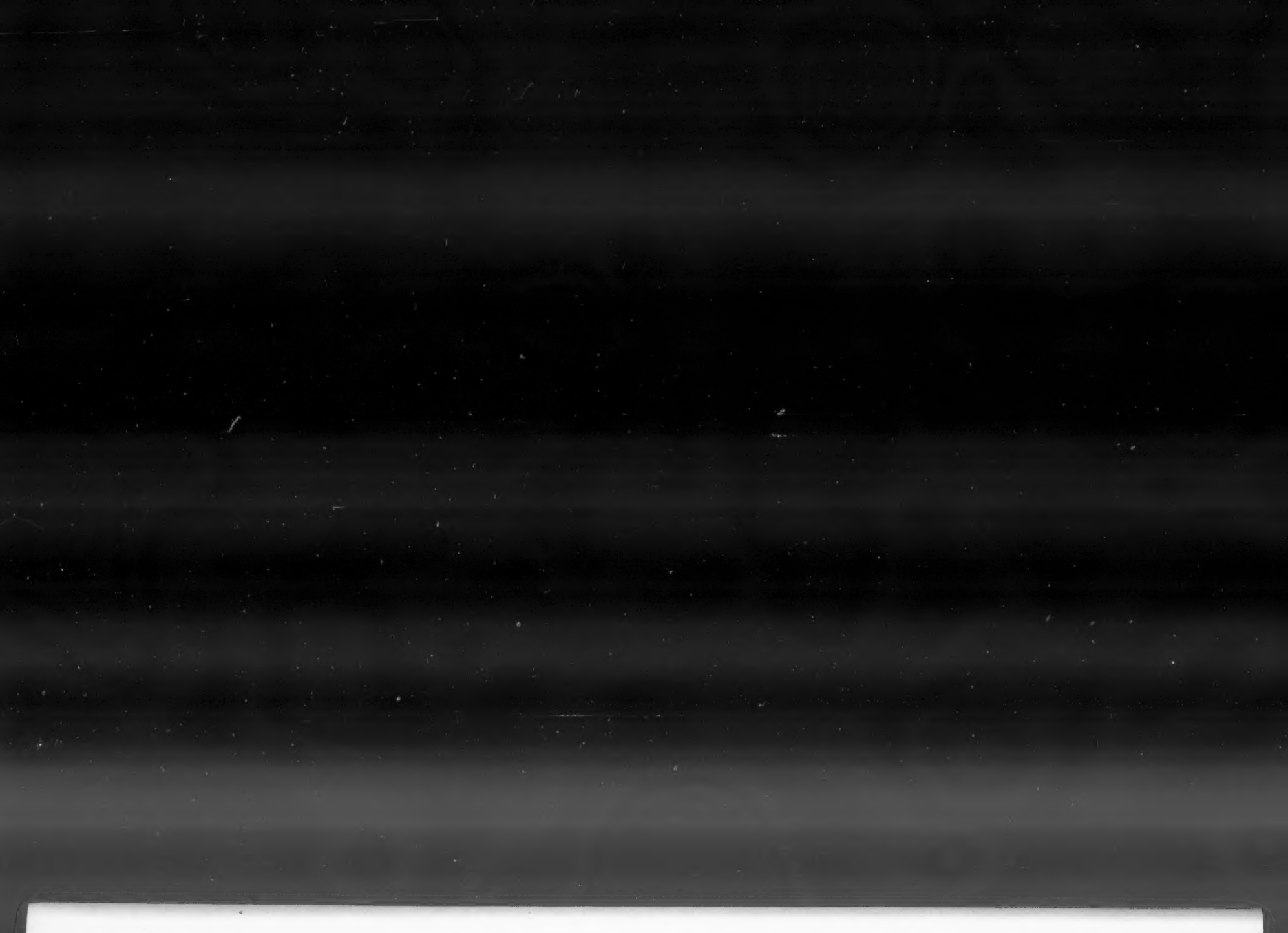
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